WORKING PLAN

OF THE

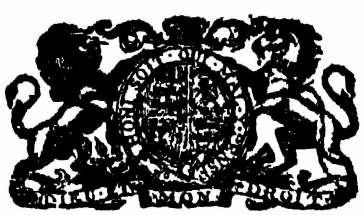
VHAN-KHARA CIRCLE

OF THE

CHUNGA MUNGA PLANTATION

BY

BERTHOLD RIBBENTROP.



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1874.

INTRODUCTION.

DURING the year 1864, a question arose whether the natural resources of this Province were sufficient to supply the growing want of fuel. New Railway Lines had sprung up, towns had increased in size, new Stations had been established, and, as a natural sequence, a scarcity of fuel began to be felt.

Ways and means were discussed how to meet this growing want, and it was resolved to found the Fuel Plantation Division throughout the Province, and small plots of Government land were selected for the purpose of arboriculture. Amongst these plots a portion of the Rukh Changa Manga was included.

At that period, the Rukh Changa Manga was thinly covered with Prosopis, Salvadora, Acacia Leucophlea, and other indigenous growth, averaging between 15 and 25 maunds per acre. Up to the first of April 1870, as many as 2,500 acres were cultivated at a cost of Rs. 41,704, but though the greater portion of this area had repeatedly been resown, only 500 acres could be pronounced a *bonâ fide* success.

The following year, 1870-71, exhibited successful operations amounting to nearly 1,200 acres. I attribute this success mainly to the adoption of a systematic method of sowing and planting, but, above all, of watering and repairing. Up to that time, especially in the old portion of the rukh, no roads had been made; but as the Plantation grew in size, supervision of plantation work and of watering became more difficult, and as the time for thinning and removing produce drew near, it was found necessary to introduce a system of roads. It was then proposed to make the new roads the boundaries of compartments and to draw out a working plan, according to all available information. This proposal met with the approval of the Conservator, and I was instructed to prepare the necessary papers.

Fortunately, the proximity of a number of natural rukhs affords every facility to extend the plantation to 20,000 acres.

A forest of such dimensions will require the supervision of more than one Forest Ranger. In all probability, the reproduction of each block of 2,000 acres would necessitate an annual watering of at least 6,000 acres. To do this in one block would, however, be impossible, and I therefore think it advisable to divide the Plantation into three separate Working Circles *viz.* :—

I. Vhan-Khara Working Circle.
II. Moujookí Working Circle.
III. Gundia Working Circle.

Each of these Circles forms a compact area, separated by natural boundaries.

WORKING PLAN

OF

VHAN-KHARA WORKING CIRCLE.

PART I.

Description of the range, its former circumstances, former treatment, &c., &c.

I. Position of the working Circle, boundaries, &c., &c.

The Vhan-Khara Circle is situated in the Lahore District, Sub-District Chunean, Tehseel Chunean.

The Circle is under the Officer in charge of the Division, whose Head Quarters are at Lahore. The Officer in immediate charge lives in the Forest house, Change Manga.

The entire circle is the *bonâ fide* property of Government. It contains 7,000 acres of land in one compact block, composed of portions of the former rukhs Changa Manga, Shahpúr, Moujokí, and forty acres of rukh Gundia. The last named small slip of land, is the only portion of the rukh Gundia, situated on the right bank of the Barí Doab Canal.

The boundaries are on the North, the Railway line; on the West, the village lands of Vhan; on the South, those of Moujokí and the Canal, and on the East, the lands of villages Gundia and Boha.

The boundary is marked by pillars, numbered from 1 to 150, beginning at the tri-junction of Vhan-Khara, rukh Changa Manga and the Barí Doab Canal escape, and ending at the tri-junction of rukh Changa Manga, rukh Moujokí and village Moujokí. From this point the numbering of the boundary pillars will continue after the survey of the rukhs situated on the left bank of the Barí Doab Canal has been completed.

NOTE.—This Working Plan has been somewhat altered. Compartments Nos. 66 to 72 inclusive having been found difficult and expensive to water were exchanged for a strip along the Canal. This change does not, however, affect the figures of the Working Plan.

The Chief markets this Circle will have to supply, will always be Lahore and Amritsar; but, above all, the railway lines—the Delhi as well as the Múltan line. The station Changa Manga, belonging to the last-mentioned line, lies within the Circle, and is not more than four miles distant from the furthest point of the plantation. The Múltan line connects Lahore with the Circle, a distance of forty miles. Amritsar, the future Depôt for the Delhi line, is about fifty miles distant, but is situated on the same Canal branch as the Circle. According to Mr. Palmer's estimate, wood can be brought at a cost of Rs. 1-8 per hundred maunds by canal boats to Amritsar.

The road from Chunean to the Changa Manga railway station traverses the Circle, which, again is intersected by a system of roads leading either to the railway station or to the Canal. All the proposed roads now in course of completion are included in this system.

II
Contents of the Circle, survey and maps.

The existing maps, merely Patwarí maps, being justly considered insufficient, Mr. Reynolds' services were placed at my disposal for the purpose of making a survey of the plantation. The hot weather however intervening, he was only able to complete the survey of the Vhan Khara range—the only one in which roads and canals had been laid out. The survey is a combination of theodolite and plane table survey, and gives an area of 7060·86 acres. Of that number 6691 are fit for arboriculture, on three acres stand the Bungalow and garden for the use of the Forest officer, 184 acres are laid out in roads, and 182 are waste land.

With the exception of a strip of land 100 feet broad—the property of the Canal Department—along the Canal escape and the Rajbaha, and the public road between Chunean and the Railway station, the whole of the range belongs to the Forest Department.

The maps are on the scale of 8 inches to the mile, namely,—original map showing the state of the plantation at the time when the survey was made, and the compartment map showing the compartments completed. The Index map, as well as the map accompanying the Forest Control Book, are two inches to the mile.

III
Former Division of Circle in ranges, &c, &c.

No acknowledged division of the Circle existed up to the present time, but the different parts of the plantation were known as :—

Note.—The Compartment map only on a reduced scale of 4 inches to the mile which shows all that is required has been photozincographed to accompany the printed copies of this Working Plan.

I. 800 acre block.
II. Vhan Kharah block.
III. 180 acre block.
IV. 1,200 acre block.
V. Boah Asul block.
VI. Gundia block.

The position of these blocks is shown on the sketch map No. I. A description of the boundaries will therefore be unnecessary.

IV. Formation and Soil.

The entire circle is a plain slanting towards the West and North, and nearly every portion of it can be watered by the Baree Doab Canal.

The soil is a sandy loam, favorable to the growth of almost every kind of tree, its only fault being a little too much stiffness. From ten to fifteen feet below the surface, the soil is much lighter.

The soil of the wasteland above mentioned, is either too much elevated for the purposes of irrigation, or it contains too many salts, or a stratum of kunkur lies on, or close beneath, the surface. Before irrigation began, the soil of the Circle exhibited hardly any weeds, but under the influence of the moisture, a dense crop of grass and weeds sprung up. Many of the weeds, such as the Salsola, are of a destructive character.

V. Species of trees and growth of trees.

The trees cultivated in the Circle are :— Dalbergia, Sissoo, Morus Alba, Cedrela Toona, Acacia Arabica, Zizyphus Jujuba, Acacia Leucophlea, Acacia Elata, Acacia Stipulata, Sapindus, various kinds of Eucalyptus and others. All these trees require one year's watering, and with the exception of one or two species of Acacia, all require several years' irrigation.

VI. Separation of area according to species of growth. Manner of utilization.

As the entire Circle is a new cultivation of mixed growth, no separation will be necessary, and the manner of utilization will be throughout the same.

See Register Page 47-95.

VII. Valuation of soil and taxation of growth.

The plantation being a recent one, it is difficult to divide the compartments into different classes as regards age. To be able, however, to judge of the reproductive power of the soil, it is necessary to be guided by the growth of the former cul-

tivation. As this criterion is wanting, I am compelled to place the soil of the whole Circle in the same category.

VIII.
Former utilization as to material and money.

There has been of course no cutting in this plantation, and therefore no sale of fuel or timber. But I have made a careful measurement of the oldest growth and a calculation based on this as to the future results.

IX.
Miscellaneous Forest produce. (Nebennutzung.)

The income derived from this item is rather considerable. The sale of grass, cotton, &c., amounted this year to upwards of Rs. 6,000,

X.
Existing rights, servitules, &c.,

No rights or servitules exist in this Circle, with the exception of water way, and a privilege enjoyed by Dian Dass, Mahunt, of grazing over the forty acres taken from the Rukh Gundia.

XI.
Administration, supervision and conditions of labour.

The present officer in charge of the Circle is Mr. Minniken, on a salary of Rs. 250 per mensem. The cost of the subordinate establishment amounts to Rs. 97 per mensem. A young Forest Ranger, whose pay averages from Rs. 100 to Rs. 150 per mensem is nearly always attached to the plantation ; but as in most cases he is placed there for the purpose of learning the work, I think it hardly fair to debit the plantation with the amount of his salary. Officers and the subordinate establishment have free quarters.

The earthwork in the plantation is made by contract, at the rate of Rs. 2 per 1,000 cubic feet excavation, and Rs. 2-8-0 per 1,000 cubic feet embankment. All real forest work such as sowing, planting, thinning, &c., is done by daily labour at three annas per diem. The coolies are "Urdh wallahs", but lately the ryots of the surrounding villages have been employed as daily labourers in the Plantation.

XII
Cultivation.

The method of cultivation now accepted consists in trenching the ground at 10 feet apart with trenches one foot deep and one foot wide. The soil thus obtained is converted into a ridge, and on the trench side of this ridge the seed is sown. The cost of the trenching amounts to Rs. 10-8-0 per acre. The cost of the seed averages between 8 annas and one rupee per acre, and the sowing to about 12 annas per acre.

The cost of Moghas, Canals and water-feeders amounts to about Rs. 5 per acre. It has been calculated that all sowings will require to be watered seven or eight years at a cost of Rs. 3 for the first two years, and Rs. 1-8-0 for the subsequent years.

To a great extent sowing has, for the last two years, been superseded by planting on the ridge. This entails an additional expense of Rs. 2 per acre, but the cost of sowing and seed is saved.

The chief benefit derived from this method is that we utilize Canal water and ryot labour at a time when they are least required for agricultural purposes.

The canals and water-feeders have to be cleaned annually, and the bridges kept in repair.

XIII. Protection of forest and exposure to injury.

The failing of the Canal supply is the chief danger to which the Circle is exposed. The erection of Moghas, a system of well-levelled Canals and a well-regulated establishment of bildars have greatly modified the chances of injury, and only a complete break down of the Canal can cause a serious loss.

Frost is another source of danger to be apprehended. The Acacia species suffer more from it and the Acacia Arabica freezes down to the ground annually. To prevent this we have tried various experiments—such as entirely suspending irrigation during the cold season, establishing a free circulation by means of thinning ; but except on places where the drainage was perfect we have had no satisfactory results. Yet another danger to guard against is fire in the forest. By enforcing strict rules, and imposing heavy fines this can be obviated, and the new system of roads has reduced the chances to a minimum.

Lastly, forest weeds, such as Salsola, grasses and others, endanger the young growth considerably. The cultivation of cotton between the lines of saplings has been found to benefit the young growth by checking the exuberance of the weeds, besides producing a certain revenue. If, however, cotton has not been dibbled in, but sown broadcast, it will be found as hurtful as the weeds.

In a large Circle such as Vhan-Khara, the destruction caused by rats and Nilgae are not of much consequence. The strict preservation of the feathered tribe will prove the most effectual safeguard against the destruction caused by insects.

Names of section.	Camp Mark Number.	Station Letters.	Angles and Distances.		Names adjoining
RUKH CHANGA MANGA.			179·08	20	Rukh Jhoy Jullokay.
	11	G.	180·50	50	
			30 84		
			239 47	20	
	50	F.	120·12	40	
			37·08		
	51		257·51	30	
	52	E.	132·09	20	
			46·89		
			150·19	00	Rukh Monjokay.
	53	D	179·40	30	
			38·60		
			120 23	10	
		C.	239·36	30	
			21 38		
			161·27	30	
			198·32	00	
			22·17		Jowah on Monjokay.

RUKH CHANGA MANGA.

RUKH CHANGA MANGA.

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
Section 2.		O.	231·07	20	Jumber Kalan.
			128·53	40	
			18·96		
		N.	170·44	00	
			189·16	40	
			25·10		
Section 3.		M.	178 19	10	
			181 41	20	
			22 99		
		L.	194·03	30	
			165·56	30	
			20·21		
		K.	139·03	30	Rukh Jhoy Jullokay.
			220·55	50	
			38 22		
		J.	183·34	30	
			176·25	10	
			30·44		
		I.	185·27	30	
			174·32	30	
			48·15		
		H.	191·39	30	
			165 20	30	
			18 11		

RUKH CHANGA MANGA.

SECTION 3.

Names of scetion.	Compartment Number.	Station Letters.	Angles and Distances.		Namesf adjoining villages.
		W.	23 31		
			183·48	00	Vhan Khara
			176·12	50	
		V.	24 ·27		
			172·49	30	
			187·10	50	
		U.	19·32		
			195·21	20	
			164·38	20	
		T.	44·48		
			193·59	10	
			166·00	00	
		S.	54·34		
			168·32	00	Chukokay.
			191·28	40	
		R.	40·56		
			285·17	20	
			74·42	40	
		Q.	42·41		
			178·52	00	Jumber Kalan.
		P.	181·08	00	
			44·04		

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
RUKH CHANGA MANGA.			254 52	50	Vhan Khara.
			105·07	10	
	66	D.			
			50 43		
			162·34	20	
			197 25	30	
	67	C.			
	68		39·41		
	69				
			190 57	30	
			169 01	50	
	70	B.			
			35·13		
			179·02	20	
			180 57	30	
	71	A.			
			33·30		
			177 21	40	
			182 38	10	
	72	Z			
			29·28		
			183 34		
			176·26		
	75	Y.			
			45·96		
			121 13	00	
			235 47	10	
	76	X.			
			20·12		
			220 53	40	
		W.	139 05	50	

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
RUKH CHANGA MANGA.			184·57	40	Monjokay.
			175·03	10	
		K.			
			37·63		
			128·06	40	
			231·52	30	
	62	J.			
			34·65		
			199·14	00	
			160·45	00	
		I.			
			44·89		
			181·53	40	
			178·07	50	
		H.			
			41·47		
			216·38	20	
			143·21	50	
	63	G.			
			7·78		
	63		245·14	10	
	64		114·45	50	
	65	E.			
			46·92		
			177·19	50	Chuulan.
		1	182·39	20	
		E.			
			36·43		

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
RUKH CHANGA MANGA.		V.	75·98		Section No. 2. (*Plantation.*)
		U.	180 07		
			179 54		
			24·10		
		T.	179·02		
			180·58		
			15 25		
		S.	182·43		
			177·17		
			17·24		
		R.	118·11		
			241·49		
			47·70		
		C.	300·30		
	55				
	56		59·31		
			21·38		Rukh Changa Manga.
	SECTION		No. 1		
		B.	22·17		
		A.	228·25	10	Moujokay.
	57		131·35	20	
			27 92		
Section No. 1.					

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
Section No. 3.		P.	16 52		
		Q.	180·05 179·55		
			22·67		
		R.	179·58 180 01	58 01	
			54·25		
		V.	183·41 170·20		Section No. 2.
			14·20		
Section No. 1.		U.	56 40 303·21		
			75·98		
		Section No. 2			
Section No. 1.		X.	20·12		
		W.	305·27 54·38		On Rukh Changa Manga, Section No. 3.
			9 20		
		V.	238·02 121·59		Section No. 2.

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
		Z.	177·21		
			182·39		
			29·28		
		Y.	183·34		Vhan Khara.
			176·26		
			45·96		
Section No. 1.		X.	124·14		
			235·47		
			20·12		Jowah on Section No. 2.
		ANGLES REOBSERVED SECTION No. 1.			
		CHANGA MANGA RUKH.			
ON RUKH CHANGA MANGA.		1	48·45		
		N.	121·53		
			238·07		
			40·76		
Section No. 3.		O.	178·11		Section No. 2
			181·49		
			35·30		
		P.	181·07		
			178·52		

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
	31	G.	40·10		
			180·00		
	32		179·58		
	33	F.			
			36·24		
			180 02		
	34		179·59		
	35	E.			
	36		30·61		
			180·02		
			179·57		
Cultivation begins.		D.			
	37		40·48		
	38				
	39				
			179·56		
	40		180·05		
	41	C.			
	42		43·67		
	43		179·58		
Head of road to Station.	44		180·01		
	45	B.			
	46		40·27		
			180·07		
	48		179 53		
	49	A.			
			68·03		
			179 40		
			180·20		
		E.	37·08		Jowah on Canal.
PLANTATION	BETWEEN		RAILWAY	AND	CANAL.

Barce Doab Canal.

PLANTATION BETWEEN RAILWAY AND CANAL.

Names of section.	Compartmt... Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
		R.	38·79		
			180 01		
	15	Q.	179·58		
			52 67		
			179 59		Railway.
	16	P.	180·01		
	17		53·99		
	18				
	19		179·51		
	20	O.	180·02		
	21				
	22		42 26		
	23				
			231·16		
	24	N.	128·44		
	25				
	26		51·58		
			177·27		
	27	M.	182·32		
			23·38		
			168 16		
	28	L.	191·45		Boat Canal.
			29 86		
			149 17		
	32	K	210·45		
	33		41·56		
			194·18		
	29	J.	165 42		
			13·56		
			236 54		
		I.	123 05		
			35·03		
			283·16		
	30	H.	76·16		Gundian.
	31		39·40		
			179·55		
			180 05		

Names of section.	Compartment Number.	Station Letters.	Angles and Distances.		Names of adjoining villages.
			178·34 181·25		Railway.
			33·62		
		R.	180·12		
			179·18		

(Sd.) W. H. REYNOLDS,

Assistant Conservator of Forests.

AREA CALCULATION

OF

VHAN KHARA

WORKING CIRCLE

SURVEYED IN

FEBRUARY AND MARCH 1871.

Area of Plantation between Railway and Baree Doab Canal Surveyed in March 1871.

Names of adjoining villages. Exterior.	Interior.	Stations.	Angles. Deg.	Angles. Min.	Bearings. Deg.	Bearings. Min.	Distances. Chains	Distances. Links	*Distance on the* Meridian. N. Chains	N. Links	S. Chains	S. Links	Perpendicular. E. Chains	E. Links	W. Chains	W. Links	Distance on the Meridian of each station from the first in the series. Chains	Links	Distance on the Perpendicular of each station from the first in the series. Chains	Links	Sums of each successive pair of Co-ordinates. Chains	Links	North Products in Acres. N. E & S. W.	South Products in Acres. N W & S. E.
CHANGA MANGA REKH, SECTION No. 2.	Compartments.	I																						
	12	H	194	40	115	32	48	45	...	...	20	88	43	77	...	...	S 20	88	E 43	77	E 43	77	...	91 39
	11	G	179	09	130	12	18	11	...	...	11	69	12	84	..	...	32	57	56	61	100	38	...	117 34
	50	F	239	47	129	21	30	84	...	...	19	55	23	87	...	.	52	12	80	48	137	09	...	268 01
	51, 52	E	48	11	189	08	37	08	...	..	36	61	...	...	5	89	88	73	74	59	155	07	...	567 71
BAREE DOAB CANAL.	52, 51, 50	A	179	53	57	19	68	03	36	74	...	...	57	26	...	...	51	98	131	91	206	50	735 89	... ..
RAILWAY AND CANAL.	49, 48	B	180	02	57	12	40	37	21	87	...	...	33	93	...	...	30	11	165	87	297	78	651 24	... ..
	46, 45, 44, 43	C	180	05	57	14	43	67	23	64	...	...	36	72	...		6	47	202	63	368	50	871 13	... ...
	42, 41, 40, 39	D	179	58	57	19	40	98	22	13	...	...	34	49	...	...	N 15	67	237	15	439	78	973 67	... ...
	38, 37	E	179	59	57	17	30	64	16	56	...	..	25	78	...	...	32	23	262	95	500	10	825 17	... ...
	36, 35, 34	F	179	59	57	16	36	24	19	60	..	...	30	48	..	.	51	83	293	46	556	41	1,090 56	.. ..
	33, 32	G	180	05	57	13	40	10	21	69	...	..	33	72	...	...	73	52	327	20	620	66	1,346 21	... ..
	31	H	76	46	57	20	39	40	21	27	...	...	33	17	..	...	94	79	360	39	687	59	1,462 50	... ...
	31																							

GUNDIA.

BGAH USUL.

RAILWAY.

	PLANTATION BETWEEN																											
		30	I	123	06	314	06	35	03	24	37	...	...	...	...	25	16	119	17	335	26	695	65	1,695	99	...	...
		29	J	165	42	257	12	13	56	...	...	3	00	...	...	13	22	116	17	322	04	657	30	...	...	197	19
			K	210	45	242	54	41	56	...	...	18	93	...	...	36	99	97	24	285	08	607	12	...	...	1,149	28
		32, 33	L	191	45	273	39	29	86	1	90	...	...	...	...	29	80	99	14	255	31	540	39	102	67	...	...
		28	M	182	33	285	24	23	38	6	21	...	...	...	...	22	54	105	35	232	78	488	09	303	10	...	...
		27	N	128	44	287	57	51	58	15	89	...	...	...	...	49	07	121	24	183	76	416	54	661	88	...	...
		26, 25, 24	O	180	02	236	41	42	26	...	...	23	21	...	...	35	31	98	04	148	49	332	25	...	...	770	82
		23, 22, 21, 20, 19	P	180	01	236	43	53	99	...	...	9	63	...	...	45	14	68	42	103	40	251	89	...	...	746	10
		18, 17, 16	Q	179	58	236	44	52	67	...	...	28	89	...	...	44	04	39	54	59	40	162	80	...	...	470	17
		15	R	179	18	236	42	38	79	...	...	21	30	...	...	32	42	18	24	27	01	86	41	...	...	184	05
		14, 13	I	59	32	236	00	32	62	...	...	18	24	...	...	27	04	0	00	0	00	27	01	...	...	49	27
						115	32																				
23	Sides, ...		...	...	...	...	...	...	...	...	231	90	231	90	366	28	366	28	Sums of N. & S.			Products,		10,746	01	4,631	33
											+	03	—	03	+	33	—	34				Difference,		6,114	68	....	...
																						Area,		3,057	34	4	777
																										Sq.	miles.

(SD.) W. H. REYNOLDS,

Assistant Conservator.

Area of Section No. 1 (Changa Manga Rukh) Surveyed in February and March 1871.

Names of adjoining villages. Exterior.	Interior.	Stations.	Angles. Deg.	Angles. Min.	Bearings. Deg.	Bearings. Min.	Distances. Chains	Distances. Links	*Distance on the* Meridian. N. Chains	N. Links	S. Chains	S. Links	Perpendicular. E. Chains	E. Links	W. Chains	W. Links	Distance on the Meridian of each station from the first in the series. Chains	Links	Distance on the Perpendicular of each station from the first in the series. Chains	Links	Sums of each successive pair of Co-ordinates. Chains	Links	North Products in Acres N. E. & S. W.	South Products in Acres. N W & S E.
		W							—		+		+		—									
Vhan Khara.	No. 1.	X	235	47	113	41	20	12	...	...	8	08	18	42	...	...	S 8	08	E 18	43	E 18	43	...	14 89
		Y	176	26	169	28	45	96	...	...	45	18	8	40	...	...	53	27	26	83	45	26	...	204 53
		Z	182	38	165	54	29	28	...	...	28	40	7	13	...	...	81	67	33	96	60	79	... ...	172 64
		A	180	57	168	32	33	30	...	...	32	65	6	56	...	...	114	32	40	52	74	48	... ..	243 18
		B	169	02	169	29	35	13	...	...	34	54	6	41	...	...	148	86	46	93	87	15	... .	302 05
		C	197	26	158	31	39	41	...	...	36	67	14	43	...	...	185	53	61	37	108	30	...	397 14
		D	105	07	175	57	50	43	...	...	50	30	3	56	...	...	235	84	64	93	126	30	... ...	635 42
Chunran.		E	182	39	101	04	36	43	...	...	7	00	35	78	...	...	242	84	100	74	165	67	. ...	115 97
		F	114	46	103	43	46	92	...	...	11	12	45	58	...	...	253	96	146	37	247	11	... ...	274 79
Moujoray.		G	143	22	38	29	7	78	6	09	...	...	4	84	...	...	247	87	151	21	297	58	181 23	... ...
		H	178	07	1	51	41	47	41	45	...	...	1	34	...	...	206	43	152	55	303	76	1,258 78	... ...
		I	160	45	359	58	44	89	44	89	...	...	0	00	0	03	161	55	152	52	305	07	1,369 15	... ...

Moujokay.	Section																												
		J	231	52	340	43	34	65	32	71	...	...	...	...	11	44	128	84	141	08	293	60	960	37	...	...
		K	175	08	32	35	37	69	31	76	...	...	20	30_2	..	...	97	08	161	40	302	48	960	68	...	...
		A	131	35	27	38	27	92	24	74	...	..	12	95_1	..	...	72	34	174	30	335	76	830	67	...	...
Rukh Moujokay.		B	198	31	339	13	22	17	20	73	...	...	...	...	7	87	51	61	166	49	340	85	706	58	...	...
		C	59	29	357	44	21	38	21	36	...	...	..	...	0	85	30	25	165	04	332	13	709	43	...	.
		R	241	48	237	13	47	70	...	...	25	80	...	...	40	10_8	56	08	125	58	291	22	...	...	752	22
Section No. 2.		S	177	17	299	01	17	24	8	36	...	...	...	...	15	08_1	47	72	110	51	236	09	197	37	...	...
		T	180	58	296	18	15	25	6	72	...	...	...	...	13	69_1	41	00	96	83	207	34	139	33	..	...
		U	179	54	297	16	24	10	11	04	...	...	...	...	21	42_2	29	96	75	43	172	26	190	18	...	...
		V	121	58	297	10	75	98	34	69_1	...	..	...	...	67	60_6	N 4	72	7	89	83	32	288	95	...	...
Section No. 3.		W	54	33	239	08	9	20	...	...	4	72	...	...	7	89	0	00	0	00	7	89	...	...	3	72
			—	—	113	41																				
23	Sides, ...	...	...	...	...	...	...	...	...	284	54	284	49	185	70	185	97	Sums of N. & S. Products,					7,792	72	3,116	55
										—	3	+	02	+	13	—	14				Difference,		4,676	17	...	...
											51		51		83		83				Area,	...	2,338	08	Acres.	

(Sd.) W. H. REYNOLDS,

Assistant Conservator.

Area of Section No. 2 (Changa Manga Rukh) Surveyed in February and March 1871.

Names of adjoining villages.		Stations.	Angles.		Bearings.		Distances.		*Distances on the*								Distance on the Meridian of each station from the first in the series.		Distance on the Perpendicular of each station from the first in the series.		Sums of each successive pair of Co-ordinates.		North Products in Acres.		South Products in Acres.	
									Meridian.				Perpendicular.													
Exterior.	Interior.		Deg.	Min.	Deg.	Min.	Chains	Links.	N.		S.		E.		W.											
									Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	N. E. & S. W.		N. W. & S. E.	
Section No. 1.	AZIMUTH OBSERVATION.	V															S									
		U	180	06	117	10	75	98	...	...	34	69	67	51	...	...	S 34	69	E 67	58	E 67	58	...	...	234	43
		T	179	02	117	16	24	10	...	...	11	04	21	41	...	...	45	73	88	99	156	57	...	...	172	85
		S	182	43	116	18	15	25	...	...	6	72	13	69	...	...	52	45	102	68	191	67	...	...	128	80
		R	118	11	119	01	17	24	...	...	8	36	15	07	...	...	60	81	117	75	220	43	...	...	184	28
Rukh Mouzah.		C	180	07	57	12	47	70	25	82	...	...	40	08	...	...	34	99	157	83	275	58	711	55	...	...
		D	179	40	57	19	38	60	20	83	...	...	32	48	...	...	14	16	190	31	348	14	725	18	...	...
	No. 2.	E	132	09	56	59	46	89	25	53	...	...	39	30	...	...	N 11	37	229	61	419	92	1,072	06	...	...
		F	120	13	9	08	37	08	36	59	...	...	5	89	...	...	47	96	235	50	465	11	1,701	84	...	...
Rukh Thoy Jullokay.		G	180	51	309	21	30	84	19	55	...	...	...	...	23	86	67	51	211	64	447	14	874	16	...	...
		H	165	20	310	12	18	11	11	69	...	...	...	...	13	82	79	20	197	81	409	45	478	65	...	...

SECTION No. 3.

		SECTION																									
			I	121	53	293	32	48	45	20	88	...	...	...	...	43	74	100	08	154	07	351	88	731	73	...	...
			N	178	17	237	25	40	76	...	...	21	96	...	...	31	36	78	12	119	71	273	78	...	...	601	22
			O	181	07	235	37	35	30	...	...	19	91	...	...	29	15	58	18	90	56	210	27	...	...	419	28
			P	180	05	236	44	16	52	...	...	9	06	...	...	13	81	49	12	76	75	167	31	...	...	151	58
			Q	179	58	236	50	22	67	...	...	12	41	...	...	18	98	36	71	57	77	134	52	...	...	166	94
			R	183	41	236	48	54	25	...	...	29	72	...	...	45	41	6	99	12	36	70	13	...	...	208	43
			V	56	41	240	29	14	20	...	...	6	99	...	...	12	36	0	00	0	00	12	36	...	...	8	64
				—	—	117	10																				
23	Sides,	...	...	...	...	...	...	...	...	160	89	160	89	235	50	235	50	Sums of N. & S. Products,						6,298	17	2,276	45
																				Difference,				4,021	72		
										—0	05	+0	05	—	09	+	09			Area,				2,010	86		

(SD.) W. H. REYNOLDS,

Assistant Conservator.

Area of Rukh Changa Manga Surveyed in February and March 1871.

Names of adjoining villages. Exterior.	Interior.	Stations.	Angles. Deg.	Angles. Min.	Bearings. Deg.	Bearings. Min.	Distances. Chains	Distances. Links.	*Distances on the* Meridian. N. Chains	N. Links	S. Chains	S. Links	Perpendicular. E. Chains	E. Links	W. Chains	W. Links	Distance on the Meridian of each station from the first in the series. Chains	Distance on the Meridian of each station from the first in the series. Links	Distance on the Perpendicular of each station from the first in the series. Chains	Distance on the Perpendicular of each station from the first in the series. Links	Sums of each successive pair of Co-ordinates. Chains	Sums of each successive pair of Co-ordinates. Links	North Products in Acres.	South Products in Acres.
					Deduced from Azimuth observation.																		N. E. & S. W.	N. W. & S. E.
Rukh Moujokay.	Section No. 2. Compartments.	C															0	00	0	00				
	56,55	D	179	40	57	19	38	60	20	84	...	...	32	51	...	...	N 20	84	E 32	51	E 32	51	67	75	...	...
	54,53	E	132	09	56	89	46	89	25	54	...	...	39	34	...	...	46	38	71	85	104	36	266	54	...	...
	52,51	F	120	13	09	08	37	08	36	62	...	...	5	89	...	...	83	00	77	74	149	59	547	80	...	...
	50	G	180	51	309	21	30	84	19	55	...	...	...	...	23	84	102	55	55	90	131	64	257	36	...	...
	11	H	165	20	310	12	18	11	11	69	...	...	...	...	13	82	114	24	40	08	93	98	109	86	...	...
	12	I	174	32	295	32	48	45	20	88	...	...	...	...	43	70	135	12	W 3	62	36	46	76	13	...	...
Rukh Thoy Jullokay.	No. 3. West of Railway line.	J	176	25	290	04	30	44	10	44	...	...	...	...	28	57	145	56	32	19	W35	81	...	...	37	39
		K	220	56	286	29	38	22	10	84	...	...	...	...	36	63	156	40	68	82	101	01	...	...	109	59
		L	165	56	327	25	20	21	17	63	...	...	...	...	10	87	173	43	79	69	148	51	...	...	252	91
		M	181	41	313	21	22	99	15	78	...	...	...	...	16	71	189	21	96	40	176	09	...	...	277	87
Jumbar Kalan.		N	189	17	315	02	25	10	17	76	...	...	...	...	17	73	206	97	114	13	210	33	...	...	373	90
		O	128	54	324	19	18	96	15	40	...	...	...	...	11	05	222	37	125	18	239	31	...	...	368	54
		P	181	08	273	13	44	04	2	47	...	...	...	...	43	95	224	84	169	13	294	31	...	...	72	69
Kay.		Q	74	43	274	21	42	41	3	22	...	...	...	...	42	27	228	06	211	40	380	53	...	...	122	53
		R	191	29	169	04	40	56	...	...	39	82	7	69	...	...	188	24	203	71	415	11	1,652	97	...	...

Chuko-	Section North		S	160	00	180	33	54	34	...	...	34	32	...	.	0	52	135	92	204	23	407	94	2,215	93	...	..
			T	164	38	166	83	44	48	...	..	43	25	10	56			90	67	192	87	398	10	1,721	78	...	
			U	137	11	151	11	19	32	...	..	16	93	9	31	...		73	74	184	56	378	43	640	68	...	...
			V	176	13	158	22	24	27	...	...	22	56	8	95	...	..	51	18	175	61	360	17	812	54	.	...
			W	139	06	154	35	23	31	...	...	21	05	10	01	...	...	30	13	165	60	341	21	718	25	...	...
Vhan Khaba			X	235	47	118	41	20	12	...	...	8	08	18	44	...	..	22	05	147	16	312	76	232	71	...	...
		76	Y	176	26	169	28	45	96	...	...	45	17	8	40	...	..	S 28	12	138	76	285	92	1,291	50		...
		75	Z	182	38	165	54	29	28	..	.	28	40	7	13	...	.	51	52	131	63	270	39	767	90	...	...
		72	A	180	57	168	32	33	30	...	...	32	65	6	56	...		84	17	125	07	256	70	838	13	...	.
		71	B	169	02	169	29	35	13	...	...	34	54	6	41	...		118	71	118	66	243	73	841	84	...	...
		70	C	197	26	158	31	39	41	.	.	36	67	14	44		..	155	38	104	22	222	88	817	30	...	...
		69 68,67	D	105	07	175	57	50	43	..	...	50	28	3	56	...	...	205	66	100	66	204	88	1,030	14	.	.
Chunkan.		66	E	182	39	101	04	36	43	...	...	7	00	35	80	...	...	212	66	64	86	165	52	115	84	...	...
		65,64,63	F	114	46	103	43	46	92	...	...	11	12	45	60	...	...	223	78	19	26	84	12	93	54	...	. .
		63	G	143	22	38	29	7	78	6	09	.	...	4	84	...	..	217	69	14	42	83	68	..	...	20	51
Moujokay.	Section No. 1.		H	178	07	1	51	41	47	41	47	...	...	1	34	...	...	176	22	13	08	27	50	...	...	114	04
			I	160	43	359	58	44	89	44	91	...	...	...	...	0	03	131	31	13	11	26	19	...	.	117	62
		62	J	231	52	340	43	34	65	32	72	...		.	...	11	44	98	59	24	55	57	66	...	...	123	22
			K	175	03	32	35	37	69	31	76		.	20	31	...	..	66	83	4	24	23	79	...	...	91	44
		57	A	131	33	27	38	27	92	24	74	..	...	12	96	...	...	42	09	E 8	72	E 4	48	11	08	...	.
Rukh Moujo-kay			B	198	31	339	13	22	17	20	73	..	...	...		7	87	21	36	0	85	9	57	19	84	.	..
			C	239	35	357	44	21	38	21	36	.		...	...	0	85	0	00	0	00	0	85	1	82	...	...
37 Sides.				6300	00	57	19			451	84	451	84	309	85	309	85	Sums of		N. & S.		Products.		15,169	23	2,062	25
										+	06	—	06	+	15	—	16			Difference,		...		13,086	98		
																				Area,		...		6,543	49	Acres.	
																								10	224	Sq. miles.	

(Sd.) W. H. REYNOLDS,

Assistant Conservator.

Area of Section No. 3 (Changa Manga Rukh) Surveyed in February and March 1871.

Names of adjoining villages.		Stations.	Angles.		Bearings.		Distances.		Distances on the Meridian.				Distances on the Perpendicular.				Distance on the Meridian of each station from the first in the series.		Distance on the Perpendicular of each station from the first in the series.		Sums of each successive pair of Co-ordinates.		North Products in Acres.		South Products in Acres.	
Exterior.	Interior.								N.		S.		E.		W.											
			Deg.	Min.	Deg.	Min.	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	Chains	Links	N. E & S. W		N. W. & S. E.	
		I								+		—	+		—											
	Rukh Thoi Jullokay.	J	176	25	290	04	30	44	10	44	...	...	...	...	28	59	N 10	45	W 28	58	W 28	58	...	...	29	87
		K	220	56	256	29	38	22	10	84	...	...	...	...	36	65	21	30	65	21	98	79	...	...	101	76
		L	165	56	327	25	20	21	17	03	...	..	...	...	10	88	38	34	76	09	141	30	..	...	240	78
		M	181	41	313	21	22	99	15	75	...	...	...	...	16	72	54	13	92	81	168	90	...	..	266	69
		N	189	17	315	02	25	10	17	76	...	...	...	..	17	74	71	91	110	53	209	36	...	...	361	57
	Jumbar Kalan.	O	128	54	324	19	18	96	15	40	...	...	...	...	11	06	87	32	121	61	232	16	...	...	357	76
		P	181	08	278	13	44	04	2	47	.	...	..	...	43	97	89	79	165	54	287	15	...	...	70	93
		Q	74	43	274	24	42	41	3	22	..	...	...	...	42	29	93	01	207	79	373	33	.	..	120	21
No 3		R	191	29	169	04	40	56	...	...	39	82	7	69	...	...	53	21	200	10	407	89	1,623	40	...	...

CHUKOKAY.

VHAN KHARA.

SEC. No. 1.

SECTION No. 2.

SECTION																											
	S	166	00	180	33	54	34	...	...	54	34	...	...	0	52	S 1	08	200	62	400	72	2,175	51	...	...
	T	164	38	166	33	44	48	...	...	43	26	10	35	...	...	44	30	190	27	390	89	1,639	43	...	...
	U	187	11	151	11	19	32	...	...	16	93	9	31	...	...	61	22	180	96	371	23	628	12	...	...
	V	176	13	158	22	24	27	...	...	22	56	8	95	...	...	83	77	172	01	352	97	795	95	...	...
	W	84	33	154	35	23	31	...	...	21	05	10	00	...	...	104	81	162	01	334	02	702	78	...	...
	V	131	21	59	08	9	20	4	72	...	...	7	89	...	...	100	09	154	12	316	13	...	...	149	21
	R	176	19	60	29	14	20	6	99	...	...	12	36	...	...	93	10	141	75	295	87	...	...	206	81
	Q	180	02	56	48	54	25	29	70	...	...	45	39	...	...	63	38	96	32	238	07	...	...	707	54
	P	179	54	56	50	22	67	12	40	...	...	18	98	...	...	50	97	77	33	173	65	...	...	215	50
	O	178	53	56	44	16	52	9	06	...	...	13	81	...	...	41	91	63	51	140	84	...	...	127	60
	N	181	48	55	37	35	30	19	93	...	...	29	13	...	...	21	97	34	36	97	87	...	...	195	15
	I	52	39	57	25	40	76	21	95	...	...	34	34	...	...	0	00	0	00	34	36	...	...	75	49
21	Sides, ...	...	...	...	...	...	...	...	...	197	69	197	96	208	20	208	42	Sums of N. & S.				Products,		7,615	19	3,226	87
										+	13	—	14	+	11	—	11					Difference,		4,388	32		
																						Area, ...		2,194	16	Acres.	

(SD.) W. H. REYNOLDS,

Assistant Conservator.

AZIMUTH.

Azimuth observed on Right Bank of Baree Doab Canal at Changa Manga on the 2nd March 1871.

("Palaris" eastern elongation)

Face.	Object.	A. Deg	A. Min	A. Sec.	B. Min.	B. Sec.	C. Min.	C. Sec.	Means. Deg.	Means. Min.	Means. Sec.	General Means. Deg.	General Means. Min.	General Means. Sec.	Summary.
Left ...	Mark	172	03	20	04	50	04	30	172	04	18	172	04	18	
	Star .	116	30	00	31	20	30	50	116	30	43	116	30	43	Deg Min. Sec.
	Star ..	116	30	00	31	20	30	50	116	30	43	55	33	35	55 33 35
	Mark ..	172	03	40	04	50	04	40	172	04	23				55 35 41
															55 34 38 = Angle between Star and Mark.
															1 36 56 = Azimuth of "Polaris."
															57 11 34 = Working Azimuth.
Right 180.	Mark ...	352	04	50	05	50	05	20	352	05	20	352	05	13	
	Star ...	296	28	40	29	40	29	40	296	29	20	296	29	32	
	Star ...	296	29	00	30	20	29	50	296	29	43	55	35	41	
	Mark ...	352	04	10	06	10	05	00	352	05	07				Needle Bearing = 52° 12′ 40″.

	Deg.	Min.	Sec.
Declination of "Polaris"	= 88	37	25
North Polar Distance	= 1	12	35

Log. 82 58 = 1 9168749
Log. Cos. Latitude 31° 35′ = 9 9303781

Log. 96° 94′ = 1·9864968
Azimuth of "Polaris" = 1° 36′ 56″

(Sd.) W. H. REYNOLDS,

Assistant Conservator.

FOREST DIVISION,

PLANTATIONS,

FOREST CIRCLE CHANGA MANGA,

FOREST RANGE VIHAN KHARA.

AREA STATEMENT,

ACCORDING

TO ORIGINAL SURVEY OF 1871,

WITH

DESCRIPTION OF PRESENT FOREST,

A N D

HISTORY.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest house block.	I.	86	64	2	...	...	...	88	64

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
	20 Acres 15′ to 18′ height. 20 „ 12′ to 14′ „ 20 „ 6′ to 8′ „ 20 „ 1′ to 3′ „ Dalbergia Sissoo mixed with a few Acacia Arabica and Zizyphus Jujuba. 6·64 acres covered with Eucalyptus, Tallow trees and Cedrela toona. The water courses are studded with Salices and Tamarix. 2 acres sheds house for Moonshees, Chaprassies' hut, &c. Compound.	In 1866, seventy-two acres were trenched a foot deep, the loose soil being left in the trenches. This area was sown with Kikar, Sissoo and Siris. Kikar came up well, Siris indifferently, and scarcely any Sissoo germinated. It has been asserted that the overflooding of the soil was the cause of the Sissoo seed not germinating. This could have been prevented but for the inexperience of the Officer and Subordinates then in charge. During the winter of 1868, frost destroyed the Kikar down to the roots. Blanks of the previous year were sown with Sissoo and Kikar, which came up thickly, but owing to a long drought, many died, and most of the surviving seedlings were killed by overflooding when the water came at last. Again, in 1869, blanks were sown, and this time with better success. Eight acres were ridged and the seed sown on the ridge. This proved a complete success. Four acres were ploughed, sown broadcast and interplanted with Tallow trees. This too was successful. The blanks were again filled up with Toon and Eucalyptus. But once more the water-supply failed, and nearly the whole year's operation proved a failure.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods	Acres.	Roods,	Acres.	Roods.	Acres.	Roods.
Forest house block.	II.	74	65	...	...	...	...	74	65
Ditto.	III.	80	09	...	...	...	...	80	09

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
		In 1870, the whole Compartment was interridged, as recommended in Joint Memorandum (Encloure to Circular No. 17F.). Sissoo and Ber were sown. The seed came up fairly well and the crop survived, notwithstanding the continued drought. This year's, 1871, thinning operations have been carried out.
[illegible]	25 Acres 12′—20′ height and 7″ to 12″ girth. 10 Acres 6′—10′ height. 3 „ 1′—3′ „ 20 „ just germinating, rest still unsown. As Compartment I. chiefly Dalbergia Sissoo mixed with a few Kikar and Ber.	The history of operations and failures is almost the same as that of Compartment I. All blanks are, or will be, resown this year, and as we can now properly regulate the water-supply, we may be reasonably hopeful of success.
[illegible]	30 Acres 18′—20′ height. 20 „ 1′—3′ „ Sissoo with a few Ber and Kikar. The rest fairly covered wtih Kikar and new germinating sowings.	The operations up to 1869 were the same as in the first Compartment. In 1870 it was interridged at 7½ feet apart and sown with Sissoo and Ber. Twelve acres came up and are flourishing, the rest has been resown this year, 1871, and is coming up well.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest house Block	IV.	123	11	...	...	10	...	133	11
Ditto.	V.	85	82	...	...	...	...	85	82

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
4	40 Acres 14′—20′ height. 15 „ 2′—3′ „ 30 „ seedlings. The rest has been resown. The older part only Sissoo, the younger Sissoo, Ber and Phulai mixed. Very high land.	The Compartment was trenched in 1867, and the soil remained in the trenches. In 1868 it was sown with Siris and Kikar, but in consequence of the difficulty in watering, a sprinkling only came up. In July of the same year it was resown with Sissoo and Ber, but did not germinate at all. In 1869 it was once more resown, but with very little success. In 1870 it was interridged and resown with mixed seed, but only a small quantity germinated. This year it has been resown with Ber and Phulai, which is partly coming up. Owing to the height of the land above the Canal level, we must expect a blank of 30—40 acres in our first rotation.
4	40 Acres 8′—10′ or 12′ height. 10 Acres transplants. 10 Acres 4′—5′ height. The rest germinating. Sissoo with a few Ber.	This Compartment was, like the Compartment IV, trenched in 1867, and sown with Siris and Kikar in 1868. The sowings came up only close to the watercourses. In 1868 it was ridged and sown with Sissoo and Ber, but without results. The non-success was owing to the want of water. It was resown in 1869, and 10 acres germinated. In 1870 it was interridged and sown. The seed came up well. The blanks were filled up in 1871 by sowing, and 10 acres by transplanting.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres,	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest house Block	VI.	70	50	...	...	...	...	70	50
Ditto.	VII.	77	05	...	...	...	...	77	05

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
3 2 1	35 Acres 7′—20′ height. 40 „ transplants 3′—4′ height.	This Compartment was trenched in 1867, and sown with Sissoo and Kikar. The seed germinated, but died in consequence of not getting water. It was then ridged in July 1868, and sown with Sissoo and Ber, which did not germinate at all. This failure may be ascribed to the lateness of the season and want of water. The whole was resown in 1869, and 30 acres were a success. The blanks were resown with Sissoo in 1870, but did not germinate. This year, 1870, 40 acres were filled up with transplants, and the remainder small blanks have been resown with Sissoo, Phulai and Ber seed, all of which are germinating.
2 1	20 Acres 6′ to 7′ height. 10 „ 2′ to 3′ „ 46 „ transplanting 2′—3′ height. Sissoo and Ber.	Fifty acres of this Compartment were trenched in 1867, and sown with Sissoo and Kikar. Only a tree here and there came up. It was resown in 1868 with Sissoo and Ber which did not germinate. It was ridged at 15′ apart and sown in July 1868, but only a small portion germinated. Of the resowings in 1869, 40 acres came up, but they were too far apart. Thirty acres which were

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest house Block	VIII.	121	77	...	...	30	...	151	30

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
		ridged and sown laboured under the same disadvantage. In 1870, the whole Compartment was interridged and sown, but no success at all obtained. In 1871, 46 acres were transplated and do well.
4	12 Acres 20′ high. 40 „ 12′ to 14′ „ 30 „ 2′ to 3′ „ 40 „ 1′ to 2′ „ 30 „ Blanks. Sissoo with a good mixture of Ber.	In 1868, twelve acres of this Compartment were ridged and sown with Sissoo, showing a complete success. In 1869, 143 acres were sown with Sissoo and Ber in trenches. Forty acres of these germinated, but many trees perished—the Sissoo through drought, the Ber through cold. In 1870, 103 acres were resown, and with the exception of 20 acres, came up well. The repeated failures in these 8 Compartments of the Station block are mostly due to want and irregularity of irrigation. From 1866 to 1868, it was tried to irrigate the whole block out of one 2′×2′ outlet, and with Canals which were not level. In 1868, a new 4′×4′ outlet was built, but on a level which, with ordinary water supply, was below the surface level of the Plantation. In 1870, a weir was built across the Canal at our

Block.	Compartment No.	Wood producing Area.		Other Forest land		Not wood producing Area		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods	Acres.	Roods
Forest house Block	IX.	100	...	...	...	23	51	123	51
Ditto.	X.	103	...	..	...	20	77	123	77
Ditto	XI.	110	34	...	...	27	...	137	34
Ditto.	XII	118	85	...	...	...	...	118	85
Ditto.	XIII.	118	85	...	...	...	...	118	85
Ditto.	XIV.	118	85	...	...	...	...	118	85

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
		expense and in combination with a high level Rajbaha. We are now able to water the whole area, with the exception of 11 acres in block IV. A list appended to the Working Plan will show that, owing to the want of previous plans and system, Rs. 30 per acre for work alone have been expended, whereas, repairs and all included, Rs. 14 should have been sufficient.
1	Sissoo, Ber 23 acres, high ground. 25 acres Sissoo, transplants.	Ridged at 10 feet in 1870, Twenty-five acres were planted with Sissoo of 1870 spring sowings. The rest were sown with Sissoo and Ber in 1871.
1	Sissoo, Ber, 85 acres, high soil with sulphate of soda. 5 Acres Jeel. 15 Acres transplants, Sissoo.	Ridged at 10 feet apart in 1870. Fifteen acres were planted with Sissoo. The rest were sown with Sissoo.
1	Sissoo, Ber, Phulai.	Ditto ditto.
1	Ditto	Ditto ditto.
1	Ditto	Ditto ditto.
	...	Ridged at 10 feet apart in 1871.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest house Block	XV.	117	06	...	...	...	...	117	07
Ditto.	XVI.	117	34	...	...	...	...	117	34
Railway Block.	XVII.	64	77	...	...	...	...	64	77
Ditto.	XVIII.	64	77	...	...	...	...	64	77
Ditto.	XIX.	64	77	...	...	...	...	64	77
Ditto.	XX.	64	77	...	...	...	..	64	77
Ditto.	XXI.	64	77	...	...	...	...	64	77
Ditto.	XXII.	64	77	...	...	...	...	64	77
Ditto.	XXIII.	64	77	...	...	...	...	64	77
Ditto.	XXIV.	64	77	...	...	...	...	64	77

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
..	...	...
½	36 Acres Sissoo sowing. Rest Rukh.	Ridged in 1871 at 10 feet apart and partly sown with Sissoo.
1	Sissoo, Ber Phulai. Coming up well.	Ridged in 1871 and sown with Sissoo, Ber and Phulai.
1	Ditto.	Ditto.
½	Ditto.	Ditto.
..	Ditto.	Ditto.
..	Rukh.	Ridged in 1871.
...	Rukh.	Ridged in 1871.
...	..	Ridged.
...	..	Ridged.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Railway Block.	XXV.	64	77	..	...	...	...	64	77
Ditto.	XXVI.	64	77	..	...	..	...	64	77
Ditto.	XXVII.	64	77	...	...	...	...	64	77
Ditto.	XXVIII.	64	77	...	...	...	...	64	77
Ditto.	XXIX.	68	08	..	...	...	...	68	08
Ditto.	XXX.	68	02	..	...	..	...	68	02

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
...	Rukh.	Ridged in 1871.
...	...	...
...	...	...
...	Ditto.	Ridged in 1871.
...	Rukh and cultivation on yearly lease.	Ridged in 1871.
½	40 Acres Sissoo, transplants. Rest Rukh.	This land was given rent-free to Zemindars for the cultivation of three crops under the following condition :— The Zemindars to ridge the land 10 feet apart at the time of sowing their first crop. We are entitled to plant Sissoo yearlings on the ridge at 5 feet distance. The Zemindars to water our trees together with their crops, and to pay for the water Tax.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Railway Block.	XXXI.	68	02	. .	...	...	...	68	02
Ditto.	XXXII.	68	02	...	...	...	...	68	02
Ditto.	XXXIII.	58	38	...	...	...	...	58	38
Ditto.	XXXIV.	58	38	...	...	...	...	58	38
Ditto.	XXXV.	58	38	...	...	...	...	58	38
Ditto.	XXXVI.	58	38	...	...	...	...	58	38

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
		By this contract we lose the price of the grass, or about 8 annas per acre, but gain 8-10 in work, besides the amount of water tax Rs. 3. The soil also is kept free from weeds.
2	Sissoo transplants 3′ high.	1871. This Compartment was given to the Zemindars under the same conditions.
⅔	29 Acres Sissoo, transplants Rest Rukh.	The planted part was given in 1871 to Zemindars under the same conditions as Compartments XXX. XXXI.
⅔	25 Acres Sissoo, transplants Rest Rukh.	As above.
⅔	25 Acres Sissoo, transplants Rest Rukh.	As above.
⅔	23 Acres Sissoo, transplants. Rest Rukh.	As above.
...	24 Acres Sissoo, transplants,	As above.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Railway Block.	XXXVII.	58	38	...	...	...	...	58	38
Ditto.	XXXVIII.	58	38	...	...	...	...	58	38
Ditto.	XXXIX.	58	38	...	...	...	...	58	38
Ditto.	XL.	58	38	...	...	...	...	58	38
Ditto.	XLI.	58	38	...	...	...	..	58	38
Ditto.	XLII.	58	38	...	...	...	...	58	38
Ditto.	XLIII.	58	38	...	...	...	...	58	38
Ditto.	XLIV.	48	38	...	...	10	...	58	38

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
$\frac{1}{6}$	24 Acres transplants. Rest Rukh.	As above, let out to Zemindars. The rest was ridged during the current year, 1871.
$\frac{1}{6}$	23 Acres transplants. Rest Rukh.	As Compartment XXXVII.
$\frac{1}{6}$	9 Acres Sissoo, transplants. Rest Rukh.	As above.
...	Rukh.	Ridged in 1871.
...	...	Ridged in 1871.
...	...	Ridged in 1871.
...	...	Ridged in 1871.
$\frac{1}{6}$	15 Acres Sissoo sowings.	Ridged and sown in 1871.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Railway Block.	XLV.	58	38	..	...	...	...	58	38
Ditto.	XLVI.	58	38	..	...	..	...	58	38
Forest house Block	XLVII.	95	17	...	...	...	...	95	17
Ditto.	XLVIII.	94	68	...	...	...	...	94	68
Ditto.	XLIX.	108	..	...	...	18	13	126	13
Ditto.	L.	128	13	..	...	..	...	128	13
Ditto.	LI.	126	13	..	...	...	...	126	13

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
1	58 38 Sissoo sowings.	Ridged and sown in 1871. Comes up well.
1	58·38 Sissoo and Phulai sowings.	Ridged in 1870, sown in 1871. Ditto.
...	20 Acres Sissoo and Ber sowings. Rest Rukh.	Ridged in 1870, sown in 1871. Ditto.
...	10 Acres Sissoo, Ber and Phulai sowings.	Ridged in 1870, partly sown in 1871. Ditto.
1	Sissoo, Ber and Phulai sowings.	Ridged in 1870, sown in 1871 with Sissoo, Ber and Phulai, which come up well.
1	Sissoo, Ber and Phulai sowings.	Ridged in 1870, sown in 1871 with Sissoo, Ber and Phulai, which come up well.
1	15 Acres Sissoo, transplants. Rest sowings of Sissoo, Ber and Phulai.	The whole Compartment was ridged in 1870. Fifteen Acres were transplanted on the ridge from the spring sowings of 1870, and over 80 per cent., flourish. This cultivation may be called a complete success. The rest was sown with Sissoo, Ber and Phulai during the summer of 1871, and promises well.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest house Block.	LII.	126	13	...	...	...	...	126	13
Ditto.	LIII.	126	13	...	...	...	...	126	13
Ditto.	LIV.	120	02	...	...	13	...	133	02

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
1	38 Acres Sissoo, 2′ to 4′ high. Rest Sissoo, Ber and Phulai. 2″—8″ high.	Ridged in 1870, at 10 feet apart, 38 Acres were filled up with transplants at 5 feet apart. The transplants were from the spring sowings of 1870, and transplanted in December 1870. The rest of the Compartment was sown with Sissoo, Phulai and Ber during the summer of 1871.
...	82 Acres Sissoo, transplants. 2′—4′ high. 10 Acres 4′ height. Rest 3″ to 1′	Ridged in 1870, at 10 feet apart, was partly sown in 1870 with Sissoo, but only a small area could be watered. Ten acres success. Eighty-two Acres were covered with transplants and flourish. The rest was sown in the spring of 1871 with Sissoo, Ber and Phulai, a good success attending the operation.
1	70 Acres Sissoo transplants 2′—4′ 50 Acres Sissoo sowings 2′—4′ high. 13 Acres blank.	Ridged in 1870, the whole Compartment was sown with Sissoo, of which 50 Acres was a complete success the rest, 70 Acres was covered with Sissoo transplants.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Forest House Block.	LV.	85	65	...	...	...	...	85	65
Ditto.	LVI.	83	04	3	05	...	...	86	09
Canal Chouki Block.	LVII.	115	70	...	...	...	...	115	70
Ditto.	LVIII.	103	04	...	...	...	...	103	04

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
2	Sissoo 4′—6′	Ridged 7½ feet apart in 1870, this Compartment was sown with Sissoo, which come up, but not very regularly. All blanks were filled up at once and the Compartment shows the most complete success.
2	80 Acres Sissoo 4′—6′ 3·04 Mulberry, Eucalyptus, Sissoo, Toon, &c. 3·05 Forest house, garden, &c.	In 1870, 80 Acres were ridged at 7½ feet apart and sown with Sissoo. Most of it came up. Blanks were resown at once. A complete success. Acres 3 04 were ridged like the above and sown with Mulberry interplanted with Eucalyptus, Toon, &c. The Forest house and out houses were built in 1870-71. A garden for the use of the officer in charge is close to the house.
...	Rukh cultivated.	This land is let on a yearly lease. It will be cultivated as soon as the new Canal Rajbaha is completed, probably during 1871-72.
...	Ditto.	Ditto.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Canal Chouki Block.	LIX.	109	79	...	...	...	...	109	79
Ditto.	LX.	109	85	...	...	...	...	109	85
Ditto.	LXI.	103	05	...	...	...	...	103	05
Ditto.	LXII.	116	29	...	...	...	...	116	29
Ditto.	LXIII.	130	95	...	...	...	..	130	95
Ditto.	LXIV.	112	45	...	...	...	...	112	45
Ditto.	LXV.	118	66	...	...	...	...	118	66

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
...	Ditto. partly cultivated.	The land is let on a yearly lease. It will be cultivated as soon as the new Canal Rajbaha is completed, probably during 1871-72.
...	Ditto.	Ditto.
...	Rukh.	Ditto.
...	Ditto.	Ditto.
...	Ditto.	As previous Compartment.
...	Ditto.	Ditto.
	Ditto.	Ditto.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Canal Chouki Block	LXVI.	75	00	...	...	...	...	75	00
Ditto.	LXVII.	77	24	...	...	...	..	77	24
Ditto.	LXVIII.	100	32	...	...	...	...	100	32
Ditto.	LXIX.	98	57	...	...	..	...	98	57

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
...	Rukh.	Will be ridged and cultivated in 1871-72, either by seed in April, or if there is a sufficient water supply in December, by transplants.
...	Rukh. A small area, cultivation, with a sprinkling of trees.	Ditto.
..	Rukh. Sixty acres under cultivation, with a sprinkling of trees here and there. 5 Acres Sissoo.	Sixty acres of this Compartment were cultivated in 1868 and 1869, but proved a failure. Cotton which was sown for protection smothered all the young plants. Five acres of Sissoo were sown in 1871 on the ridge and proved a success. Sixty acres of the Compatment are ridged for next year's cultivation.
$\frac{1}{0}$	25 Acres Sissoo and Ber germinating. Rest, cultivation, with a few small trees.	The Compartment was planted with cuttings in 1868, but only a few have taken roo s and rema n. In 1869, the area was ridged 6 inches deep and sown with Mulberry, Sissoo, Ber and Kikar. The

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Canal Chouki Block	LXX.	99	85	...	...	...	...	99	85
Ditto.	LXXI.	101	30	...	...	...	...	101	30

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
		place between the ridges was sown with cotton. The cotton came up so thickly, that all the young plants were smothered. The re-sowings of 1870 failed on account of insufficient water supply. In 1871, we ridged the land and sowed 25 acres with Ber, Jhund and Sissoo. This succeeded; the rest will be sown or planted next season.
1	70 Acres Sissoo, Mulberry and Tamarix. 32 Acres Sissoo, Ber, Jhund and Mulberry germinating. 1"—30" high. Rest, partly, cultivation, with a slight sprinkling of young trees and ridged.	The history is much the same as that of the former Compartment, with the exception of 10 acres success. The rest of the Compartment is ready for sowing or planting.
4 3 2 1 0	5 Acres 10—14 feet Sissoo 20 ,, 3—4 feet Sissoo and Mulberry. 40 Acres 1—3 inches Sis-	In 1868, this Compartment was planted with cuttings of Sissoo and Tamarix, which died from drought. In 1869, 5 acres were ridged 1 foot deep at 15 feet apart, and sown with Sissoo and Kikar, which

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
	Continued. LXXI.								
Canal Chouki Block	LXXII.	75	84	...	...	4	53	80	37
Ditto.	LXXIII.	105	77	...	...	9	45	115	22

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
	soo, Ber and Mulberry. 2 Acres Eucalyptus, Toon, &c. 20 Acres, with a sprinkling of trees. 9 Acres cultivation. Rest blanks.	succeeded. The rest was ridged at 15 feet with 5" ridges, and inter-sown with cotton, which killed the whole of the young trees. In 1871, the whole area which failed the previous years was ridged, partly sown and partly planted. The blanks are on high land, where it is difficult, or almost impossible, to water.
1st	45 Acres 14′—20 high up to 13" girth. 10 Acres 3′—4′ high. 15 „ 1"—3" „ 2 „ Eucalyptus and Toon. 3 Acres blanks. 4·53 Acres belong to Canal Department.	In 1868, we tried to plant cuttings, but failed. In 1869, 45 acres were inter trenched and sown with Sissoo and Kikar, which proved a success. The rest was ridged in 1870, and partly planted in December 1870, partly sown in Spring 1871.
2nd	40 Acres 14′—20′ high and 11" average girth, Sissoo. 10 Acres 6′—10′ high. 40 „ 2′—6′ „	In 1869, 50 acres were ridged a foot deep, at 15 feet apart and sown with Sissoo and Kikar. This was a complete success as far as Sissoo is concerned. Ten acres of this were in 1870 inter-trenched and sown with Mulberry, which came up and flourishes.

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
	Continued LXXIII.								
Canal Chouki Block	LXXIV.	145	51	...	..	...	...	145	51
Ditto,	LXXV.	134	39	...	...	6	...	140	39

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
	Mulberry and Sissoo. 12 Acres 6" high Sissoo, Ber and Phulai.	The rest failed, as in the former Compartments, two years successively, until it was ridged in 1870, and filled with transplants.
3rd Year.	80 Acres 14′—20′ high, 11 inches girth. 40 Acres 6′—10′ high. 25 51 „ 1′—6′ „ Sissoo.	In 1868, 70 acres were trenched and sown with Sissoo and Kikar. Eight acres were ploughed and sown with cotton, and subsequently ridged 6" deep at 15′ apart, and sown with Sissoo, Ber, Mulberry and Kikar. Of the above only 12 acres germinated. In 1869, 80 acres were ridged and sown with Sissoo and Kikar, with very favorable results. The greater portion of the blanks from 1868 were re-sown and re-planted, but owing to the small water supply the success was inconsiderable. In 1870, all thinly or not covered portions of the Compartment were inter-ridged and sown or planted with success.
2nd Year.	70 Acres 14′—20′ height. 11 Inches girth, Sissoo. 40 Acre 6 to 10 feet high, Sissoo.	In 1868, 100 acres were trenched and sown with Sissoo and Kikar; water supply failed and only 30 acres came up. In 1869, 53 acres were ridged and sown with

Block.	Compartment No.	Wood producing Area.		Other Forest land.		Not wood producing Area.		Total Area.	
		Acres.	Roods.	Acres.	Roods.	Acres.	Roods.	Acres.	Roods.
Canal Chouki Block	LXXVI.	83	33	...	...	10	...	93	33

Age.	Description of Compartment.	HISTORY OF COMPARTMENT.
	24·39 Acres 3′ to 5′ high. Sissoo and Phulai. 6 Acres blanks, high land.	Sissoo and Kikar which germinated well. The blanks of 1863 were filled with transplants, with only very partial success. In 1870, most of the blanks were filled up with Sissoo sowings and in 1870-71 the rest was covered with transplants. Only 6 acres of this area are blanks, but this area is very high land.
8½	30 Acres 14′ to 20′ height. 43 „ 4′—8′ Sissoo and Kikar. 10 Acres blanks, bad high ground.	In 1868, this Compartment was trenched and sown with Siris and Kikar of which about half germinated. Holes were dug over the whole Compartment for Sissoo transplants, but the season was dry and they were not planted. In 1869, blanks of the previous year were re-sown, but without result. Two acres were ridged and sown with Kikar which germinated well. In 1870, two acres were ridged and sown with Sissoo which came up thickly. Blanks were re-sown and planted at 10 feet apart. Later in the season 30 acres more were ridged and sown, which came up well. The last blanks were filled up with transplants.

CALCULATIONS FOUNDED ON OBSERVATION.

CHANGA MANGA CANAL BELT.

A belt *(vide* Dr. Brandis' report No. 93 of 1868, para. 34) 66 feet wide of Sissoo, Kikar and other trees was planted by the Canal Officers in July 1865. The saplings received a top dressing with manure in winter 1866, and have been thinned 3 times.

Calculations founded on observation.

VALUATION SURVEY 1868.

	Number of trees.	Average girth at 6 feet from ground.	Average Cubic Contents of marketable wood.	Aggregate Cubic Contents.
Dominant	94	17″·8	3·744 c. ft.	351·9 c. ft.
Average	189	10″·9	1·138 „	215·1 „
Oppressed	94	7″·6	0·468 „	43·9 „
	377	...	...	610·9 c. ft.

Assuming that dry Sissoo wood weighs 40 lbs. per cubic foot, this would give upwards of 600 maunds per acre in four years, or an average annual production of 305 cubic feet or 152½ maunds per acre.

This is an extremely high yield, but we cannot expect anything like this yield from our plantations for the following reasons:—

The area surveyed was the best portion of a small plantation, without blanks, on excellent soil manured and watered continually.

Our plantations are unequally stocked with many patches of bad soil and many blanks which are not likely to be stocked before the first crop is cut. In many cases it may not be practicable to water them longer than for the first two or three years.

Under these circumstances, one-third of the yield, *viz.*, 50 maunds or 100 cubic feet per acre, is, in my opinion, the highest yield that we can reasonably expect.

The Valuation Survey of the same piece of land in July 1871, or exactly after 6 years' growth, stands thus :—

CHANGA MANGA CANAL BELT.

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
													SISSOO.													
				Dominant.																						
...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	4	4	4	7	2	4	1	...	1	3	1	Average height 38 feet.
				Average.																						
2	1	2	...	...	...	...	2	4	1	5	8	7	6	8	...	...	...	...	...	...	...	...	...	...	...	Average height 34 feet.

I had trees of both sorts, Dominant and Average, cut down and weighed. The average weight of the Dominant trees is 8 maunds 5 seers, that of the Average trees 6 maunds 9 seers.

For convenience sake I will arrange the figures in the same form as Dr. Brandis.

	Number of trees.	Average Girth at 6 feet from ground.	Average Cubic Contents of marketable wood.	Aggregate Cubic Contents.
Dominant	31	2′4″	16·25	503·75
Average	46	2′0″	12·45	572·70
	77	...	...	1076·45

This would give a yield of a thousand maunds per acre.

During the two years which intervened between the two Valuation Surveys, 600 trees per acre, with upwards of 300 maunds of wood, have been thinned out.

The protection of the fifth and sixth year is, therefore, equal to the growth of the first four years, or about 300 maunds per acre.

If we divide the 1,300 maunds over the entire period of six years, the average annual increase will be upwards of 200 maunds per acre.

I doubt not that, if we make a Valuation Survery of the identical half acre two years' hence, it will be found that the annual average production will have again increased; and should the increase progress at the same rates as

during the previous years, the yield will be upwards of 800 maunds per acre at the end of the tenth year.

The Officer in charge of the Division should not only at Changa Manga, but at all other plantations, have a few blocks of an acre each marked out by small pucka pillars and make a yearly Valuation Survey of each of these blocks. This should be done at a fixed time of the year. If such and other observations were carefully made and regularly noted down, we would cease to grope in the dark, and Forestry would, ultimately, be raised to a science in this country.

It will be an important and interesting work to collect facts, and prepare tables, showing the progressive increase of the annual yield per acre.

Dr. Brandis, in order not to over-estimate the yield, omitted to note in his calculations the fact that the yearly increase does not advance in the same ratio but that, up to a certain age, it becomes larger. It was, however, impossible to foresee that the increase would be so rapid. The fact being incontrovertible, it was not possible to omit it entirely in my calculations.

TABLE OF INCREASE.

EXAMPLES.

BEACH IN GERMANY PER ACRE.			OAK IN FRANCE.		EUCALYPTUS IN ALGERIA.	
Age.	Contents Cubic feet.	Thinnings.	Age of oak.	Cubic Contents.	Age.	Cubic Contents.
10	20	...	40	26	6	14
20	200	...	45	43	7	22
30	570	50	50	65	8	45
40	1,000	90	60	94	9	45
50	1,440	110	65	1·80	10	60
60	1,880	100	70	2·38	11	79
70	2,250	90	75	3·13	12	
80	2,600	80	80	3·95	13	1·26
90	2,950	80	85	4·83	14	1·55
100	3,240	80	90	5·77	15	1·88
110	3,480	80	95	6·66		
120	3,700	...	100	7·46		

In 1868, 20 acres (8 acres in Compartment I. and 12 acres in Compartment VIII.) were ridged and sown. In 1871, three years later, the area was thinned out. Four hundred and sixty-nine trees were thinned out per acre, averaging 50 maunds. Four hundred and sixty trees were left standing per acre of an average girth of 12·25 inches and an average height of 23 feet, averaging 1¼ cubic feet, that is, 575 cubic feet or 287½ maunds per acre. This would yield an average increase of about 95 maunds per acre for the first 3 years. I have compared this portion of the plantation with many other parts and made the following table for thinnings and cuttings:—

Between the 2nd and 4th year 450 trees per acre will be thinned out, giving a yield of 30 maunds of wood, leaving 450 trees with 250 maunds of wood at the end of the 4th year.

Before the end of the 6th year another 150 trees with 200 maunds can be cut out, leaving 300 trees with 3 maunds each, or 900 maunds per acre.

In the 7th and 8th year, 80 trees, averaging 3 maunds, should be thinned out, leaving 220 trees, averaging 5 maunds or 1,100 maunds per acre.

During the 9th and 10th year 20 trees should be thinned at 5 maunds each, leaving 200 trees with 7 maunds per tree, or 1,400 maunds per acre at the end of the 10th year.

At the end of 11th year there will be 200 trees with 8 maunds of wood each, or 1,600 maunds per acre.

At the end of the 12th year 180 trees with 9 maunds of wood each, or 1,620 maunds per acre.

At the end of the 13th year 180 trees with an average of 10 maunds per tree, or 1,806 maunds per acre.

At the end of the 14th year 160 trees averaging 11 maunds per tree, or 1,760 maunds per acre.

At the end of the 15th year 160 trees averaging 12 maunds per tree, or 1,920 maunds per acre.

At the end of the 16th year 140 trees with an average of 13 maunds per tree, or 1,820 maunds per acre.

At the end of the 17th year 140 trees averaging 14 maunds per tree, or 1,960 maunds per acre.

At the end of the 18th year 120 trees averaging 15 maunds per tree, or 1,800 maunds per acre.

At the end of the 19th year 120 trees averaging 16 maunds per tree, or 1,920 maunds per acre.

At the end of the 20th year 120 trees at 17 maunds per tree, or 2,040 maunds per acre.

At the end of the 21st year 120 trees at 18 maunds per tree, or 2,160 maunds per acre.

At the end of the 22nd year 120 trees at 19 maunds per tree, or 2,280 maunds per acre.

At the end of the 23rd year 120 trees at 20 maunds per tree, or 2,400 maunds per acre.

At the end of the 24th year 120 trees at 21 maunds per tree, or 2,520 maunds per acre.

FOREST DIVISION,

PLANTATIONS.

FOREST CIRCLE, CHANGA MANGA,

FOREST RANGE, VHAN KHARA.

STATEMENT

OF

RIGHTS.

1871.

No. of villages or right holders.	Name of village or right holder.	Area of village in acres.	Area of Common land kept for grazing, &c.	Area of unreserved Forest available for village.	Population.	Number of Houses.	Number of heads of cattle.	Particulars of Forest rights and privileges as originally claimed.
							I.	Forest House
...	...	...	...	...	...	...	...	...
							II.	Railway Block.
1	Dian Dass Mahunt	...	...	40·0	...	...	...	Right of grazing and firewood for Dian Dass, Mahunt of Phai Pheroo, over 40 acres of this block.

Whether determined by court of law, Commission, agreement, or otherwise.	Actually requirements of village or right holder.	Right as ultimately adjusted.	Remarks.
Block	Compartment 1—16.		
,,,	,,,	,,,	No right of any sort in this land.
	Compartment 17—46.		
Decided by the Court of Mr. Davies Settlement Officer 22nd April 1854.	Not fixed,	He has the right to graze his own Cattle and to get firewood for his own use. This right expires with him.	The amount of cattle he has a right to graze and the amount of wood he is entitled to, not fixed as yet.

No. of villages or right holders.	Name of village or right holder.	Area of village in acres	Area of common land kept for grazing, &c.	Area of unreserved Forest available for village.	Population.	Number of Houses.	Number of heads of cattle.	Particulars of Forest rights and privileges as originally claimed.
							I	Forest House.
...	...	...	...	...	...	...	...	...
							III	Canal Chouki.
2	Village Moujoki.	...	...	...	...	...	...	Right of Watercourses through the Block.
3	Village Chuncan.							
4	Vhan Khara.							

Whether determined by Court of law, Commission, agreement or otherwise.	Actual requirements of village or right holder.	Rights as ultimately adjusted.	REMARKS.
Block Compartment 47—56			
...	...	...	No rights whatever.
Block Compartment 57—76			
According to Canal Rules.	...	All the water will be carried by one water-course for Moujoki and Chuncan which does not interfere with our irrigation ono for Vhan Khara.	

PART II

WORKING REGULATIONS

AND

CALCULATING OF INCOME,

PART II.

WORKING REGULATIONS

AND

CALCULATING OF INCOME.

I. General principles and motives guiding the design of this Working Plan.

The object of this Working Plan is to regulate the order in which the different rotations of the Circle succeed each other, for the purposes of utilization, subsequent cultivations, thinnings and forest improvements; to fix as nearly as possible the Income in kind and money, and to serve as a guide to the officer in charge of the Plantation.

II. Division of the Circle into Working Blocks, manner of management and length of rotation.

I propose to divide the Circle into three Blocks, each of which will have its own rotation,—that is to say, there will be annual cuttings and reproduction in three different Blocks of the Circle. This will enable us to work the four Moghas of the Circle simultaneously, thus saving time as regards watering, besides making us more independent of a steady water supply. The water being sent into four different parts of the Plantation, will prove of greater benefit to the entire Circle than if concentrated on one point.

The constant traffic on the roads of the Circle will prevent the accumulation of weeds, and thus prove an additional protection against fires.

The work being carried on actively on three different points of the Circle, the Forester in charge of each Block will be compelled to carry on a constant personal supervision. The Ranger also, in charge of the Working Circle, having to perambulate and inspect the three Blocks almost daily, will require more intimate knowledge of his work.

I propose to adopt the management of the "Coppice with reserved standard trees"—(Tailli sous futtaie-Mittelwald.)

The reason which leads us to adopt this method in preference to the "High-forest management"—(futtaie-Hockwald) is, that we ensure a quicker return of fuel, without depriving the soil of all protection, as is the case in purely Coppice management.

III.
Sketching of Working Plan for each Block, and fixing of the time in which each Compartment has to be cut during the rotation.

At the beginning of the first rotation, I propose to fell the wood in certain Compartments, leaving from 40 to 45 trees per acre standing. Of these I would, during the next rotation, keep about twenty standing, so as to grow strong timber trees in time. The period of rotation should be ten years. I fix so short a period, in order to ensure a quick return of fuel.

Block No. 1 includes Compartments 1 to 16 and 47 to 56, with an area of 2,715 acres fit to produce wood. Block No. 2 contains Compartments 17 to 46, with 1,856·7 acres. Block No. 3 contains Compartments 57 to 76, and has an area of 2,116·88 acres. A ten yearly rotation will yield an annual cutting of 270 acres in Block No. 1,180 acres in Block No. 2, and 210 acres in Block No. 3.

The Working Plan has been made according to area, as there is no classification according to age possible in this forest, owing to the trees having been planted within a few years of each other. For the same reason the yield will not be annually the same, and with the exception perhaps of the years 1884 to 1886, will up to the first rotation increase annually.

Viewed on the map alone, even to an unprofessional eye, the succession of the felling in the different Compartments would appear somewhat peculiar. I will explain my reasons for this way of proceeding : Changa Manga labours under the disadvantage of frequent droughts, which make us entirely dependent on the Baree Doab Canal for water, and the hot winds also are most formidable enemies of our young growth. By cutting a Compartment in such a manner that it is protected during the first years of its reproduction by high-timbered Compartments, I protect the tender young growth against the hot winds ; and by distributing the felling as much as possible, the water used for the reproducing area will have to run through all the water-courses of the Plantation, exhaling moisture on its way, thus benefitting the Compartments which are not actually watered.

In the table of thinnings, Appendix to Part II., I only quote such thinnings as will yield a certain amount of saleable wood. There is no necessity to thin the transplants on ridges before the 4th year, but sowings should be thinned out with a bill-hook or pruning-knife at the beginning of the second year. Of course, this will yield no saleable wood.

IV. Thinnings.

At the end of the fourth year, the forest should be thinned every second year. The canal belt in its present condition and our oldest plots in the Plantation, sufficiently prove that this is the right period for thinning operations.

The calculations as to yield are founded on somewhat meagre facts. I have been guided by the table which will be found in Dr. Brandis' Report No. 93, of 30th December 1868, para. 34, and by the valuation survey I made this year of the same portion of the forest; also by a valuation survey of the 20 acre Plot, Compartment No. 8, and by carefully made comparisons between these and other parts of the Plantation.

V. Statement of Yield in Wood.

The calculations on which the whole yield statements are based, will be found in appendix III. to Part No. I. In making these calculations I have carefully avoided over-estimating any item; I am therefore inclined to think that the actual yield will surpass the figures in the yield statement.

The calculations as regards the contents of these trees, are partly based on the above mentioned facts, partly on the measurement of actually grown trees,

VI. Contents of Standard Trees, at the end of rotation.

The estimate of this yield is, to a certain extent, founded also on the same observations, partly on the previous thinnings of the 20 acre Plot, Block No. 1, Compartment No. .8

VII. Yield of Thinnings.

This is simply a resume of the former paragraphs, According to various experiments, we may expect two-thirds of the gross yield to be saleable wood. One-half of this yield will be first class wood, which may possibly sell as timber; the other half will be ordinary fire-wood,

VIII. Results of total Yield during the first rotation.

IX.
Manner of Cutting.

The trees should be felled by forest coolies and the Officer in charge must personally select the trees to be kept as standard trees. At all times the thinnings should be executed with the greatest care and under supervision, but in thinning a forest above six years old, the Officer must himself select and mark all the trees to be thinned out, otherwise much damage will be done.

X.
Classification, Utilization and Measuring of felled timber.

All thinned out trees under 8 years should be stacked between four poles, four and eight feet apart. All the timber above 6 years old should be classified as timber and fire-wood. The latter should be stacked in stacks of 4 by 5 by 10 feet, thus giving two hundred cubic feet or between eighty and ninety maunds per stack.

The timber should be sold by cubic foot, the fire-wood and brushwood in stacks. The weighing of the wood, or even the weighing of average stacks, causes much loss, and often begets ill-feeling. It is immaterial whether the wood is sold by indents, auction, or private sale, and must be left to the discretion of the Officer of the Division. One rule, however, must be strictly enforced, namely, that all the sold wood must be removed within two months after purchase.

I cannot estimate accurately the cost of cutting and transport. It should be executed by contract, and will probably be found to be under Rs. 3 per 200 cubic feet, stacked near the road sides.

XI.
Furture Income of Minor Forest Produce.

During the next few years, a certain income will be derived from the leasing out of land for the cultivation of cotton. This contract, however, will cease as soon as the trees have attained a certain height. One only other source of income under this heading will be derived from the sale of grass. We can always count on receiving at least Rs. 5,000 from this item, which, however, might be increased to upwards of Rs. 10, 000 if we allowed the grazing of cattle in Compartments over seven years old. In my opinion this might be done without endangering the future of the forest,

XII.
Cultivation and other Works undertaken for the Improvement of the Forest,

The system of cultivation now in vogue, namely, the ridge system, should be observed throughout. The distance of ten feet between the ridges has been found to be most advantageous, and we will continue to cultivate cotton

between the ridges in order to keep the weeds under control. The trees will be either sown or planted on ridges. Both methods have already been discussed in my "Plantations Report for 1870-71," as well as in my "Report on planting and sowing of different kinds of trees in the Punjab." As both methods are equally advantageous, they will be used indiscriminately, though at different periods of the year, by which means labour and water will be equally distributed. The watering, which has been fixed at Rs. 118 per acre for the season, will be an annual charge. The yearly cleaning of the water-courses will be an additional annual charge of about eight annas per acre.

The construction of new roads does not entail any expenditure, with the exception of the erection of bridges over the water-courses, which will be built of solid masonry over the Rajbahas. Wood from our own thinnings will be used for building the small bridges over the water-courses.

The annual cleaning of roads would be a considerable item, but for a clause inserted into the Contract of the Grass Contractors to keep the roads and pathways clean.

XIII. Proposals for the construction of houses, and grant of land to the Foresters in charge of each Block.

The Forester in charge of a block should have a small establishment, consisting of a hut for himself, one for the Chaprassie and one for the bildars under him; besides stabling for a couple of Cows and a small strip of land (about an acre and a half) on which they might grow vegetables. These people should be allowed to cut grass free of expense—say, for one cow per man.

XIV. Proposals for Permanent Establishment of Forest Coolies.

As the Circle affords work to upwards of one hundred coolies all the year round, I propose to establish two small villages, of about five acres each, and would encourage the coolies to settle therein, giving each man an equal share of land, and granting them the right to cut grass for their cattle in an adjacent Compartment. They should be so far under the jurisdiction of the Officer in charge of the Circle that he has the power to expel them in case of misbehaviour. They should be bound down to execute any kind of forest work whenever called upon to do so, especially in cases of accidents, such as fires or break of Rajbaha.

XV. Budget of Income and Expenditure.

As I had no previous guide as to former Income and Expenditure, my present estimate is, of course, open to correction. However, I have endeavoured to keep on the safe side

by estimating the Expenditure as high, and the Income as low as possible.

Two sheets of expenditure are made—one includes the total expenditure incurred since the beginning of the Plantation, the other, under the heading of "Losses on Experiments," excludes all sums expended on the plantation without adequate results, previous to the year 1871.

The Working Plan as far as thinnings, &c., &c, are concerned begin in 1871-72. Cultivation, &c., &c., will commence in 1872-73, and felling operations in 1881-82.

WORKING PLAN

REGISTER

showing the distribution of Compartments over the years of the first rotation as regards Fellings and Thinnings, calculating yearly yield in material and the cubic contents of the standard trees at the end of the rotation.

The calculation of yield of fellings, thinnings and cubic contents of standard trees are based on the experiments and calculations mentioned in Part I. Appendix 3. Para.

Standard of Calculation.

As we have no experience to guide us in fixing the scale of the increasing growth, I have taken in all forests above 6 years, the regular increase for a standard, but I repeat that we must expect a more rapidly increasing yield.

The following is a table of yield per acre.

CALCULATED YIELD OF FELLINGS, THINNINGS AND STANDARD TREES PER ACRE.

Year.	Felling, maunds	Annual thinning, maunds.	Total thinning, maunds.	Left in standard trees, maunds.
4	...	30	30	...
6	...	200	230	...
8	...	240	470	...
10	1,120	160		280
11	1,280	...	630	320
12	1,260	160		360
13	1,400	...	790	400
14	1,320	180		440
15	1,440	...	970	480
16	1,300	200		520
17	1,400	...	1,170	560
18	1,200	220		600
19	1,280	...	1,390	640
20	1,360	240		680
21	1,440	...	1,630	720
22	1,520	260		760
23	1,600	...	1,890	800
24	1,680	...		840

FELLING OF COPPICE.

No.	Year of cutting	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres	
I.	1881-82	I	Forest House Block	1	86	Dalbergia Sissoo intermixed with a few Acacia Arabica and Zizyphus Jujuba.
II.	Do.	Do.	Ditto.	8	122	Dalbergia Sissoo mixed with Zizyphus Jujuba
III.	Do.	Do.	Ditto.	56	86 09	Dalbergia Sissoo alone.
					294·09	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice. Maunds.	Total. Maunds.	
20	14	...	26 400		3,200 standard trees will be kept on the 80 acres with a calculated content of 29,600 maunds. 6·64 acres planted with Eucalyptus, Tallow trees, Cedrela, Toon, &c., are left out of the calculation.
20	13	...	23,000		
20	12	...	25,200		
20	10	...	22,400	1,02,000	
12	14	...	15,840		
40	13	...	56,000		
30	11	...	37,800		
40	10	...	41,800	1,51,440	4,880 standard trees will be left in this Compartment with a calculated content of 42,080 maunds. 30 acres of the whole Compartment are blank, but will in all probablity be covered with standard trees up to the year of felling.
80	11	...	1,02,100	1,02,100	3,200 standard trees will be left with a calculated content of 25,600 maunds. 3·04 acres with rare trees and 3·05 acres for Forest house and compound are omitted from the calculation.
				3,53,840	11,280 standard trees=97,280 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
IV.	1881-82	II.	Railway block	31	68·02	Sissoo planted on ridge.
V.	Do.	Do.	Ditto,	46	58·38	Sissoo and Phulai sown.
					126 40	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
68 02	11	...	87,040	87,040	2,720 standard trees will be left in the Compartment containing 21,760 maunds.
58·38	10	...	61,960	61,960	2,320 standard trees containing 15,240 maunds.
				1,52,000	5,040 standard trees=37,000 maunds

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VI.	1881-82	III.	Canal Chouki Block.	73	105·77	Mulberry, Sissoo sown on ridges, blanks filled up with transplants.
VII.	Do.	Do.	Ditto.	75	134·39	Sissoo sown and partly Sissoo planted, intermixed with Phulai sowings.
				III.	240·16	
				II.	126·40	
				I.	294·09	
				Total ...	660·65	

Age at time of cutting		*Calculated yield.*			Remarks.
Acres.	Year	(Puttai) standard trees.	(Taillis) coppice.	Total	
			Maunds.	Maunds.	
40	13	...	56,000		4,200 standard trees containing 34 600 maunds
10	11	...	12,800		will be left in the Compartment.
40	10	...	44,800		3 acres of this Compartment are so badly
12	10	...	13,440	1,2,7040	stocked that no yield is expected from coppice in them.
70	13	,,,	98,000		5,360 standard trees containing 46,320
40	11	,,,	51,200		maunds will be left in the Compartment.
24	10	...	26,880	1,76,080	
			III.	3,03,120	9,560 standard trees=81,120 maunds.
			II.	1,52,000	5,040 do. =37,000 do.
			I.	3,58 840	11,280 do. =97,280 do.
			Total ...	8,13,960	25,880 do. =2,15,100 do.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1882-83	I.	Forest House Block	3	80·09	Sissoo sowings intermixed with Ber and Kikar.
II.	Do.	Do.	Ditto.	6	70·5	Sissoo and Ber sowing and Sissoo transplants.
III.	Do.	Do.	Ditto.	54	120·02	Sissoo transplants and Sissoo sown.
					270·61	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.*	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
30	15	...	43,200		3,200 standard trees with 31,200 maunds
20	12	...	25,200		will be left in Compartment.
30	11	...	38,400	1,06,800	
35	13	...	49,000		2,800 standard trees containing 26,600 maunds
35	12	...	41 100	93,100	will be left in Compartment.
120	12	...	1,51,200	1,51,200	4,800 standard trees containing 43,200 maunds will be left in Compartment.
				3,51,100	10,800 standard trees=1,01,000 maunds.

No.	Year of cutting.	Block. No.	Block. Name.	Compartment. No.	Area. Acres.	Kind of Wood.
IV.	1882-83	II.	Railway Block, ...	17	64·77	Sissoo, Ber and Phulai sowing.
V.	Do.	Do.	Ditto ...	19	64·77	Ditto.
					129·54	

Age at time of cutting.		*Calculated yield..*			Remarks.
Acres.	Years.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
64·77	11	...	81,920	81,920	2,560 standard trees containing 20,480 maunds will be left in Compartment.
64·77	11	...	81,920	81,920	2,560 standard trees containing 20,480 maunds will be left.
				1,63,840	5,120 standard trees=40,960 maunds.

No.	Year of cutting	Block. No.	Block. Name.	Compartment. No.	Area Acres.	Kind of Wood.
VI.	1882-83	III.	Canal Chouki Block	72	75·84	Sissoo, sowings partly transplants.
VII.	Do.	Do.	Ditto.	70	99·85	Sissoo, Mulberry and Tamarix intermixed with Ber and Jhund.
VIII.	Do.	Do.	Ditto.	76	83·33	Sissoo sowings, blanks filled up with transplants.
		III.			259 02	
		II.			129 54	
		I.			270·61	
					659·17	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres	Year.	(Fuftai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
45	14	...	59,400		3,000 standard trees containing 29,800 maunds will be left in Compartment.
10	12	...	12,600		
15	11	...	19,200	91,200	2 acres Eucalyptus and 3 acres badly stocked have been left out of calculation of yield.
70	12	...	88,200		3,680 standard trees containing 32,240 maunds will be left in Compartment. The rest is Eucalyptus and blanks and are not included in the calculation.
22	11	...	28,160	1,16,360	
30	14	...	39,600		2,920 standard trees containing 30,400 maunds will be left in Compartment.
43	13	...	60,200	99,800	10 acres are left out of calculation on account of bad growth.
			III.	3,07,360	9,600 standard trees=92,440 maunds.
			II.	1,63,840	5,120 do. =10,960 do.
			I.	3,51,100	10,800 do. =1,0 ,000 do.
				8,22,300	25,520 2,34,400

No.	Year of cutting.	Block.		Compartment.	Area	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1883-84	I.	Forest House Block.	2	74·65	Sissoo mixed with Kikar and Ber sowings.
II.	Do.	Do.	Ditto.	9	100	Sissoo and Ber sowings. Sissoo transplants.
III.	Do.	Do.	Ditto.	52	126·13	Sissoo transplants. Sissoo, Ber and Phulai sowings.
					300·78	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total	
			Maunds.	Maunds.	
25	16	...	32,500		2,320 standard trees containing 26,200 maunds will be left in Compartment.
10	15	...	14,400		
3	13	...	4,200		Rest of Compartment has been repeatedly repaired, but as it is badly wooded, is left out of calculation.
20	12	...	25,200	76,300	
48	13	...	67,200		4,000 standard trees containing 35,846 maunds will be left in Compartment.
52	11	...	66,560	1,33,760	
38	14	...	50,160		5,040 standard trees containing 51,920 maunds will be left in Compartment.
88	13	...	1,23,200	1,73,360	
				3,83,420	11,360 standard trees=1,13 966 maunds.

No.	Year of cutting.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
IV	1883-84	II.	Railway Block.	30	68·02	Sissoo transplants and Sissoo and Jhand sowings.
V.	Do.	Do.	Ditto.	44	48·38	Sissoo sowings.
					116·40	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Years.	(Puttai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
40	14	...	52,800		2,720 standard trees containing 26,560 maunds
28	11	...	35,840	88,640	will be left in Compartment.
15	13	...	21,000		1,920 standard trees with 17,880 maunds will
33	12	...	41,580	62,580	be left.
				1,51,220	4,640 standard trees=44,440 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VI.	1883-84	III.	Canal Chouki Block.	71	101·3	Sissoo, Ber, Mulberry, Sowing, blanks filled up with transplants.
VII.	Do.	Do.	Ditto.	74	145·51	Sissoo, sowings and plantings.
		III.			246·81	
		II.			116·40	
		I.			300·78	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
5	16	...	6,500		8,400 standard trees containing 35,400 maunds
20	15	...	28,800		will be left.
40	13	...	56,000		The rest of the Compartment being either
20	12	...	25,200	1,75,000	Eucalyptus or blanks are left out of the calculation.
80	15	...	1,15,200		5,800 standard trees containing 64,000
40	14	...	52,800		maunds will be left in Compartment.
25	13	...	35,000	2,03,000	
			III.	3,78,000	9,200 standard trees=99,400 maunds.
			II.	1,51,220	4,640 Do. 44,440 Do.
			I.	3,83,420	11,360 do. 1,13,966 do.
				9,12,640	25,200 2,57,806

No.	Year of cutting.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1884-85	I.	Forest House Block.	7	77·05	Sissoo mixed with Ber sowings and partly Sissoo transplants.
II.	Do.	Do.	Ditto.	11	110·34	Sissoo, Ber, Phulai sowings.
III.	Do.	Do.	Ditto.	49	108·00	Ditto.
					295·39	

Age at time of cutting.		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Year.		Maunds.	Maunds.	
20	16	...	26,000		3,040 standard trees containing 35,040 maunds
56	14	...	73,920	99,920	will be left in Compartment. The rest remains out of calculation.
110	13	...	1,54,000	1,54,000	4,400 standard trees with 44,000 maunds will be left in Compartment.
108	13	...	1,51,200	1,51,200	4,320 standard trees containing 43,200 maunds will be left.
				4,05,120	11,760 standard trees containing 1,22,240 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
IV.	1881-83	II.	Railway Block.	32	63·02	Sissoo transplants and Sissoo and Jhund sowings.
V.	Do.	Do.	Ditto.	34	58·38	Ditto.
VI	Do.	Do.	Ditto.	36	58·38	Ditto.
					184·78	

Age at time of cutting.		*Calculated yield.* (Futtai) standard trees.	(Taillis) coppice.	Total	Remarks.
Acres.	Year.		Maunds.	Maunds.	
29	14	...	38,280		2,720 standard trees containing 28,360 maunds
39	13	...	54,600	92,880	will be left in the Compartment.
25	14	...	33,000		2,320 standard trees containing 24,200 maunds
33	13	...	46,200	79,200	will be left in the Compartment.
24	14	...	31,680		2,320 standard trees will be left in Compart-
34	13	...	47,600	79,280	ment containing 24,160 maunds.
				2,51,360	7,360 standard trees containing 76,720 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VII.	1884-85	III.	Canal Chouki Block	67	77·24	Sissoo and Mulberry transplants with Jhund sowing.
VIII.	Do.	Do.	Ditto.	69	98·57	Sissoo, Ber and Jhund sowings, some Sissoo and Mulberry transplants.
		III.			175·81	
		II.			184·78	
		I.			295·39	
					655·98	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
77	12	...	97,020	97,020	3,080 standard trees containing 27,720 maunds will be left in Compartment.
98	12	...	1,23,480	1,23,480	3,920 standard trees containing 35,280 maunds will be left in Compartment.
			III.	2,20,500	7,000 standard trees = 63,000 maunds.
			II.	2,51,360	7,260 Do. = 76 720 „
			I.	4,05,120	11,760 Do. = 1,22,210 „
			Total ...	8,76,980	2,6120 standard trees = 2,6',960 maunds.

No.	Year of cutting	Block.		Compartment.	Area	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1885-86	I.	Forest House Block.	4	123·11	Sissoo clear, and Sissoo mixed with Phulai and Ber.
II.	Do.	Do.	Ditto.	5	85·82	Ditto.
III.	Do.	Do.	Ditto.	55	85·65	Sissoo sowing.
					294·58	

Age at time of cutting.		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Years.		Maunds.	Maunds.	
40	18	...	48,000		3,400 standard trees containing 45,000 maunds will be left in Compartment.
15	16	...	19,500		
30	14	...	39,600	1,07,100	Remainder is so thinly wooded that it is left out of calculation.
40	17	...	56 000		3,200 standard trees containing 36,800 maunds will be left in Compartment.
10	15	...	14,400		
10	16	...	13,000		Remainder being blank, is left out of calculation.
10	14	...	13,200	96,600	
85	16	...	1,10,590	1,10,500	3,400 standard trees containing 44,200 maunds will be left in Compartment.
				3,14,200	10,000 standard trees = 1,26,000 maunds.

No.	Year of cutting.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
IV.	1885-86	II.	Railway Block.	18	64·77	Sissoo, Ber and Phulai sowings.
V.	Do.	Do.	Ditto.	20	64·77	Ditto.
					129·54	

Age at time of cutting.		*Calculated yield*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
64	15	...	92,160	92,160	2,560 standard trees containing 30,720 maunds will be left in the Compartment.
64	15	...	92,160	92,160	2,560 standard trees containing 30,720 maunds will be left in the Compartment.
				1,84,320	5,120 standard trees containing 61,440 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VI.	1885-86	III.	Canal Chouki Block.	57	115·7	Sissoo and Mulberry transplants.
VII	Do.	Do.	Ditto.	59	109·79	Ditto.
				III.	225·19	
				II.	129 54	
				I.	291 58	
				Total ...	619 61	

Age at time of cutting.		*Calculated yield.* (Futtai) standard trees.	(Taillis) coppice.	Total	Remarks.
Acres.	Year.		Maunds.	Maunds.	
115	12	...	1,44,900	1,44,900	4,600 standard trees containing 41,400 maunds will be left in the Compartment.
109	12	...	1,37,340	1,37,340	4,360 standard trees containing 39,240 maunds will be left in the Compartment.
			III.	2,82,240	8,960 standard trees containing 80,640 maunds.
			II.	1,84,320	5,120 Do. 61,440 „
			I.	3,14,200	10,000 Do. 1,26,000 „
			Total ...	7,80,760	24,080 Do. 2,68,080 „

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres	
I.	1886-87	I.	Forest House Block.	51	126·13	Sissoo transplants Sissoo, Ber and Phulai sowings.
II.	Do.	Do.	Ditto.	53	126·13	Sissoo transplants, Sissoo, Ber and Phulai sowings.
					252·36	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Years.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
16	17	...	21,000		5,040 standard trees containing 66,170 maunds
111	16	...	1,44,300	1,65,300	will be left in the Compartment.
92	17	...	1,28,800		5,010 standard trees containing 69,200 maunds
34	16	...	44,200	1,73,000	will be left in the Compartment.
				3,38,300	10,080 standard trees containing 1,35,370 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres	
III.	1886-87	II.	Railway Block.	39	58·38	Sissoo transplants Sissoo and Jhund sowings.
IV	Do.	Do.	Ditto.	41	58·38	Sissoo and Jhund sowings.
V.	Do.	Do.	Ditto.	43	58·38	Sissoo sowings mixed with Jhund, Phulai, Reru, &c.
VI	Do.	Do.	Ditto.	45	58·38	Sissoo sowings.
					233·52	

Age at time of cutting.		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Year.		Maunds.	Maunds.	
9	17	...	12,600		2,320 standard trees containing 26,600 maunds
49	14	...	64,680	77,280	will be left in Compartment.
58	14	...	76,560	76,560	2,320 standard trees containing 25,620 maunds will be left in Compartment.
58	14	...	76,560	76,560	2,320 standard trees containing 25,620 maunds will be left in Compartment.
58	15	...	83,520	83,520	2,320 standard trees containing 27,840 maunds will be left in Compartment.
				3,13,920	9,280 standard trees containing maunds 1,05,680

No	Year of cutting.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VII.	1886-87	III.	Canal Chouki Block.	61	103·05	Sissoo sowings mixed with Jhund, Phulai Reru, &c.
VIII.	Do.	Do.	Ditto.	66	75·00	Ditto.
				III.	178·05	
				II.	233·52	
				I.	252·26	
				Total ...	663·83	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
103	13	...	1,44,200	1,41,200	4,120 standard trees containing 41,200 maunds will be left in Compartment.
75	13	...	1,05,000	1,05,000	3,000 standard trees containing 30,000 maunds will be left in Compartment.
			III.	2,49,200	7,120 standard trees containing 71,200 maunds.
			II.	3,13,920	9,280 Ditto 1,05,680 „
			I.	3,38,300	10,080 Ditto 1,35,370 „
			Total ...	9,01,420	26,180 Ditto 3,12,250 „

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1887 88	I.	Forest House Block.	14	118·85	Sissoo, Ber and Phulai sowings.
II.	Do.	Do.	Ditto.	16	117·34	Sissoo sowings with Ber, Jhund and Phulai.
					236·19	

Age at time of cutting.		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Year.		Maunds.	Maunds.	
148	17	...	1,65,200	1,65,200	4,720 standard trees containing 66,080 maunds will be left in Compartment.
36	17	...	50,400		4,680 standard trees containing 59,040 maunds will be left in Compartment.
81	15	...	1,16,640	1,67,040	
				3,32,240	9,400 standard trees containing 1,25,120 mds.

No.	Year of cutting	Block.		Compartment.	Area	Kind of Wood.
		No.	Name.	No.	Acres.	
III.	1887-88	II.	Railway Block.	23	61·77	Sissoo, Phulai mixed sowings.
IV.	Do.	Do.	Ditto.	25	61·77	Ditto.
V.	Do.	Do.	Ditto.	27	61·77	Ditto.
					194·31	

Age at time of cutting.		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Year.		Maunds.	Maunds.	
64	14	...	84,480	84,480	2,560 standard trees containing 28,160 maunds will be left in Compartment.
64	14	...	84,480	84,480	2,560 standard trees containing 28,160 maunds will be ieft in Compartment.
64	14	...	84,480	84,480	2,560 standard trees containing 28,160 maunds will be left in Compartment.
				2,53,440	7,680 standard trees containing 84,480 maunds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VI	1887-88	III.	Canal Chouki Block.	64	112·15	Sissoo mixed with other sowings.
VII.	Do.	Do.	Ditto.	68	100·32	Ditto.
				III.	212·77	
				II.	194·31	
				I.	236·19	
				Total ...	643·27	

Age at time of cutting.		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Year.		Maunds.	Maunds.	
112	14	...	1,45,600	1,45,600	4,480 standard trees containing 49,280 maunds will be left in Compartment.
100	15	...	1,44,000	1,44,000	4,000 standard trees containing 48,000 maunds will be left in Compartment.
			III.	2,89,600	8,480 standard trees containing 97,280 mds.
			II.	2,53,440	7,680 Ditto 84,480 „
			I.	8,32,240	9,400 Ditto 1,25,102 „
			Total ...	8,75,280	25,560 Ditto 3,06,880 „

No.	Year of cutting.	Block.		Compartment.	Area.	*Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1888-89	I.	Forest House Block.	12	118 85	Sissoo, Ber and Phulai sowings.
II.	Do.	Do.	Ditto.	47	95·17	Ditto.
					214·02	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Years.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
118	18	...	1,41,600	1,41,600	4,720 standard trees containing 70,800 maunds will be left in the Compartment.
95	17	...	1,33,000	1,33,000	3,800 standard trees containing 53,200 maunds will be left in the Compartment.
				2,74,600	8,520 standard trees containing 1,24,000 mds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
III.	1888-89	II.	Railway Block.	22	64·77	Sissoo, Phulai, Ber, Mulberry mixed sowings.
IV.	Do.	Do.	Ditto.	33	58·38	Sissoo plants and Sissoo mixed sowings.
V.	Do.	Do.	Ditto.	35	58·38	Ditto.
VI.	Do.	Do.	Ditto.	37	58·38	Ditto.
					239·91	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice. Maunds.	Total. Maunds.	
64	17	...	89,600	89,600	2,560 standard trees containing 35,840 maunds will be left in Compartment.
25	20	...	34,000		2,320 standard trees containing 35,480 maunds
30	17	...	46,200	80,200	will be left in Compartment.
23	19	...	29,440		2,320 standard trees containing 39,320 maunds
35	17	...	49,000	78,440	will be left in the Compartment.
24	19	...	30,720		2,320 standard trees containing 39,400 maunds
34	17	...	47,600	78,320	will be left in the Compartment
				3,26,560	9,520 standard trees containing 1,50,040 mds.

No	Year of cutting.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VII.	1888-89	III.	Canal Chouki Block.	58	103·04	Sissoo transplants.
VIII.	Do.	Do.	Ditto.	60	109·85	Ditto.
				III.	212·89	
				II.	239·91	
				I.	214·02	
				Total ...	666·82	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Years.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
103	15	...	1,48,320	1,48,320	4,120 standard trees containing 49,440 maunds will be left in Compartment.
109	15	...	1,56,960	1,56,960	4,360 standard trees containing 52,320 maunds will be left in Compartment.
			III.	3,05,280	8,480 standard trees containing 1,01,760 maunds.
			II.	3,26,560	9,520 Ditto 1,50,040 „
			I.	3,74,600	8,520 Ditto 1,24,000 „
			Total ...	9,06,440	26,520 Ditto 3,75,800 „

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1889-90	I.	Forest House Block.	10	103·00	Sissoo, Ber sowings and Sissoo transplants.
II.	Do.	Do.	Ditto.	50	128·00	Sissoo, Ber and Phulai sowings.
III.	Do.	Do.	Ditto.	48	94·68	Ditto.
					325 68	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres	Year.	(Fŭttai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
103	18	...	61,800	61,800	4,120 standard trees containing 30,900 maunds will be left in the Compartment. The soil in this Compartment is so high and bad that I have only calculated on half the yield.
128	20	...	1,74,080	1,74,080	5,120 standard trees will be left in Compartment containing 87,040 maunds.
94	19	...	1,20,320	1,20,320	3,760 standard trees will be left in Compartment containing 60,160 maunds. This Compartment is an exceptional felling on account of the bad growth in Compartment No. 10
				3,56,200	13,000 standard trees containing 1,78,100 mds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
IV.	1889–90	II.	Railway Block.	26	64·77	Mixed sowings.
V.	Do.	Do.	Ditto.	28	64·77	Ditto.
VI	Do.	Do.	Ditto.	29	63·08	Ditto.
VII.	Do.	Do.	Ditto.	40	58·38	Ditto.
VIII.	Do.	Do.	Ditto.	42	58·38	Ditto.
					314·38	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total	
			Maunds.	Maunds.	
64	18	...	76,800	76,800	2,560 standard trees containing 38,400 maunds will be left in Compartment.
64	18	...	76,800	76,800	2,560 standard trees containing 38,400 maunds will be left in Compartment.
68	18	...	81,600	81,600	2,720 standard trees containing 40,800 maunds will be left in Compartment.
58	18	...	69,600	69,600	2,320 standard trees containing 34,800 maunds will be left in Compartment.
58	18	...	69,600	69,600	2,320 standard trees containing 34,800 maunds will be left in Compartment.
				3,74,400	12,480 standard trees containing 1,87,200 mds.

No.	Year of cutting.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
IX.	1889 90	III.	Canal Chouki Block.	65	118·66	Sissoo transplants.
				III.	118·66	
				II.	314·38	
				I.	325·68	
				Total ...	758·72	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
118	17	...	1,65,200	1,65,200	4,720 standard trees containing 66,080 maunds will be left in Compartment.
			III.	1,65,200	4,720 standard trees containing 66,080 mds.
			II.	3,74,400	12,480 Ditto 1,87,200 „
			I.	3,56,200	13,000 Ditto 1,78,100 „
			Total ...	8,95,800	30,200 Ditto 4,31,380 „

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
I.	1890-91	I.	Forest House Block.	13	118·85	Sissoo, Ber and Phulai sowings.
II.	Do.	Do.	Ditto.	15	117·00	Ditto.
					235·85	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Years.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
118	21	...	1,69,920	1,69,920	4,720 standard trees containing 84,960 maunds will be left in the Compartment.
117	21	...	1,68,480	1,68,480	4,680 standard trees containing 84,240 maunds will be left in the Compartment.
				3,38,400	9,400 standard trees containing 1,69,200 mds.

No.	Year of cutting	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
III.	1890-91	II.	Railway Block.	21	64·77	Sissoo, Phulai and Ber sowings.
IV.	Do.	Do.	Ditto.	21	64·77	Ditto.
V.	Do.	Do.	Ditto.	38	58 38	Sissoo transplants and Sissoo, Phulai and Jhund sowings.
					187·92	

Age at time of cutting.		*Calculated yield.*			Remarks.
Acres.	Year.	(Futtai) standard trees.	(Taillis) coppice.	Total.	
			Maunds.	Maunds.	
64	20	...	87,040	87,040	2,560 standard trees containing 43,520 maunds will be left in Compartment.
61	20	...	87,040	87,040	2,560 standard trees containing 43,520 maunds will be left in Compartment.
23	22	...	34,960		
35	19	...	44,800	79,760	2,320 standard trees containing 38,480 maunds will be left in Compartment.
				2,53,840	7,440 standard trees containing 1,25,520 mds.

No.	Year of cutting.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
VI.	1890-91	III.	Canal Chouki Block.	62	116·29	Sissoo transplants.
VII.	Do.	Do.	Ditto.	63	130·95	Ditto.
				III.	247·21	
				II.	187·92	
				I.	235·88	
				Total ...	671·01	

Age at time of cutting		*Calculated yield.*			Remarks.
		(Futtai) standard trees.	(Taillis) coppice.	Total.	
Acres.	Year.		Maunds.	Maunds.	
116	18	...	1,39,200	1,39,200	4,640 standard trees containing 69,600 maunds will be left in Compartment.
130	18	...	1,56,000	1,56 000	5,200 standard trees containing 78,000 maunds will be left in Compartment.
			III.	2,95 200	9,840 standard trees containing 1,47,600 mds.
			II.	2,53,840	7,440 Ditto 1,25,520 „
			I.	3,88,400	9,400 Ditto 1,69,200 „
			Total ...	8,87,440	26,680 Ditto 4.42,320 „

THINNINGS.

No.	Year of thinning.	Block.		Compartment	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
1	1871-72	I.	Forest House Block	1	20	Sissoo.
2	"	"		2	25	Ditto.
3	"	"		3	30	Ditto.
4	"	"		4	40	Ditto.
5	"	"		8	12	Ditto.
6	"	III.	Canal Chouki Block	71	5	Ditto.
7	"	"		72	45	Ditto.
8	"	"		73	40	Ditto.
9	"	"		74	80	Ditto.
10	"	"		75	70	Ditto.
11	"	"		76	30	Ditto.

Age at time of thinning.	Calculated yield.	Remarks.
4	600	The yield is so small owing to the Kikar having all died down.
4	750	Ditto.
4 to 6	900	Ditto.
4	1,200	Ditto.
4	600	All Sissoo.
4	80	Thin growth.
3	900	These may stand over till 1872-73.
3	800	
3	1,600	
3	1,400	
3	600	
	9,430	Of this about 6,000 maunds will be saleable at Rs. 5 per 100 maunds.

No.	Year of thinning.	Block. No.	Block. Name.	Compartment No.	Area. Acres.	Kind of Wood.
1	1872-73	I.	Forest House Block	1	20	Mixed forest.
2	„	„		5	40	Ditto.
3	„	„		6	35	Ditto.
4	„	„		7	20	Ditto.
5	„	„		8	40	Sissoo.

Age at time of thinning.	Calculated yield.	Remarks.
4	600	
4	1,080	
4	1,050	
4 5,6	400	
4	1,200	
	4,450	About 3,000 maunds saleable.

No.	Year of thinning.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
1	1873-74	I.	Forest House Block.	1	20	Mixed forest.
2	"	"		1	20	Ditto.
3	"	"		2	25	Ditto.
4	"	"		2	10	Ditto.
5	"	"		8	12	Sissoo.

Age at time of thinning.	Calculated yield.	Remarks.
6	4,000	
4	600	
6	5,000	
4	300	
6	3,600	
	13,500	About 8,500 maunds saleable.

No.	Year of thinning.	Block.		Compartment.	Area.	Kind of Wood.
		No.	Name.	No.	Acres.	
1	1874-75	I.	Forest House Block.	1	20	Sissoo.
2	,,	,,		1	20	Ditto.
3	,,	,,		2	3	Ditto.
4	,,	,,		3	20	Ditto.
5	,,	,,		3	30	Ditto.
6	,,	,,		4	40	Ditto.
7	,,	,,		4	15	Ditto.
8	,,	,,		5	10	Ditto.
9	,,	,,		7	10	Ditto.
10	,,	,,		8	30	Ditto.
11	,,	,,		51	15	Ditto.
12	,,	,,		52	38	Ditto.
13	,,	,,		53	92	Ditto.
14	,,	,,		54	120	Ditto.
15	,,	,,		55	85	Ditto.
16	,,	,,		56	80	Ditto.
17	,,	III.	Canal Chouki Block.	71	5	Ditto.
18	,,	,,		71	20	Ditto.
19	,,	,,		72	45	Ditto.
20	,,	,,		72	10	Ditto.
21	,,	,,		73	40	Ditto.
22	,,	,,		73	50	Ditto.

Age at time of thinning.	Calculated yield.	Remarks.
6	4,000	
4	600	
4	90	
4	600	
6—8	6,000	
6	4,000	
4	450	
4	200	
4	200	
4	900	
4	450	
4	1,140	
4	2,760	
4	3,600	
4	2,550	
4	2,400	
6—8	1,000	
4—5	600	
7	9,000	
4	300	
7	8,000	
4	1,500	
	50,340	

No.	Year of thinning.	Block. No.		Compartment. No.	Area. Acres.	Kind of Wood.
	Continued.					
23	1874-75	III.	Canal Chouki Block.	74	80	Sissoo.
24	,,	,,		74	65	Ditto.
25	,,	,,		75	70	Ditto.
26	,,	,,		75	...	Ditto.
27	,,	,,		76	30	Ditto.
28	,,	,,		76	43	Ditto.

Age at time of thinning.	Calculated yield.	Remarks.
	50,340	
7	16,000	
4—5	1,950	
7	14,000	
4—5	1,920	
7	6,000	
4—5	1,290	
	91,500	About 60,000 maunds saleable wood.

No.	Year of thinning.	Block. No.	Block. Name.	Compartment. No.	Area. Acres.	Kind of Wood.
	1875-76	I.	Forest House Block.	1	20	Sissoo.
	,,	,,		1	20	Ditto.
	,,	,,		2	25	Ditto.
	,,	,,		2	10	Ditto.
	,,	,,		2	20	Ditto.
	,,	,,		4	30	Ditto.
	,,	,,		5	40	Ditto.
	,,	,,		6	35	Ditto.
	,,	,,		6	40	Ditto.
	,,	,,		7	20	Sissoo mixed.
	,,	,,		7	46	Sissoo transplants.
	,,	,,		8	12	Sissoo mixed.
	,,	,,		8	40	Ditto.
	,,	,,		51	110	Sissoo.
	,,	,,		52	84	Ditto.
	,,	,,		53	34	Ditto.
	,,	II.	Railway Block.	30	40	Sissoo transplants.
	,,	,,		31	68	Ditto.
	,,	,,		32	29	Ditto.
	,,	,,		33	25	Ditto.
	,,	,,		34	25	Ditto.

Age at time of thinning.	Calculated yield.	Remarks.
8	4,800	
6	4,000	
8	6,000	
6	2,000	
4	600	
4	900	
8—9	8,000	Thinly wooded.
8—9	7,000	ditto.
5	1,200	
8—9	4,000	Not thickly wooded.
4—5	1,380	
8	2,880	
6—7	8,000	
4	3,300	
4	2,640	
4	1,020	
4	800	
4	1230	
4	530	
4	560	
4	500	
	64,340	

No.	Year of thinning.	Block. No.		Compartment. No.	Area. Acres.	Kind of Wood.
	Continued.					
	1875-76	II.	Railway Block.	35	23	Sissoo transplants.
	,,	,,		36	24	Ditto.
	,,	,,		37	24	Ditto.
	,,	,,		38	23	Ditto.
	,,	,,		71	70	Mixed.
	,,	,,		73	12	Ditto.

Age at time of thinning.	Calculated yield.	Remarks.
	61,340	
4	460	
4	480	
4	480	
4	460	
4—5	2,100	
4—5	360	
	65,680	

The yield of these thinnings will increase up to the middle of the first rotation, after which it will decrease until at the end of the first rotation, it will reach a fixed limit of about 240,000 maunds or 160,000 maunds saleable wood.

The fluctuating nature of the yield is owing to the fact, that the plantation has been created in the space of a few years, and can consequently not be thinned in the same periods as if the Compartments contained timber of consecutive age.

The yield up to 1892 is calculated to be about 300,000 maunds.

MATERIALS.

YIELD OF FELLINGS UP TO 1891-92 INCLUSIVELY.

Year.	Area.	Maunds.
1881-82	660·65	813,960
1882-83	659·17	822,300
1883-84	663·99	912,640
1884-85	655·98	876,980
1885-86	649·61	780,760
1886-87	664·63	901,420
1887-88	643·27	875,280
1888-89	666·82	906,440
1889-90	758·72	895,800
1890-91	671·01	887,440
	6,693·85	8,673,020

The yield of the thinnings in the same period is calculated at 3,000,000 maunds. The total yield of wood between the present period and 1891-92 will, therefore, be 11,673,020 maunds.

I had Sissoo trees felled at Changa Manga and in other localities, and weighed them with the intention of ascertaining the proportion, between timber, fuel and useless wood.

Taking the average of all my experiments I find—

Timber	33	per cent.
Fuel I. and II. Class	45	„
Small branch wood	22	„

I am therefore undoubtedly on the safe side if I calculate on 8,000,000 maunds saleable wood in the total yield of 11,673,020 maunds, notwithstanding the wood is partly obtained from young thinnings.

Total Yield of wood in sorts.

Timber	3,000,000
Fuel I. and II. Class	5,000,000
Useless wood	3,673,020
	11,673,020

STANDARD TREES ON THE GROUND AT THE END OF 1892.

Year.	No. of trees.	Maunds in 1881-82	Maunds by end of 1892.
1881-82	25,880	215,400	474.200
1882-83	25,520	234,400	464,080
1883-84	25,200	257,806	459,400
1884-85	26,120	261,960	444,740
1885-86	24,080	268,080	412,560
1886-87	26,480	312,250	444,650
1887-88	25,560	306,880	413,960
1888-89	26,520	375,800	455,360
1889-90	30,200	431,380	491,780
1890-91	26,680	442,320	479,000
Total ...	262,240	3,106,276	4,539,730

GENERAL PLAN

FOR

CULTIVATION,

FROM 1872-73 TO 1881-82.

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres	Roods.
Forest House Block I.	1			
Ditto.	2	Blanks planted out with Sissoo and Mulberry transplants (yearlings).	18	65
Ditto.	3	Repairing with transplants of Sissoo and Mulberry.	30	
Ditto.	4	Repairing with Sissoo transplants.	38	
Ditto.	5	Repairing with Sissoo transplants.	10	
Ditto.	6	Ditto.		
Ditto.	7	Ditto.		
Ditto.	8	Sowing Jhund.	20	
Ditto.	9	Filling up blanks with Sissoo transplants.	20	
Ditto.	10	Ditto.	20	
Ditto.	11	Ditto.	10	
Ditto.	12	Ditto.	10	

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres.	Roods.
Forest house Block I.	13	Repairing with Sissoo transplants.	20	
Ditto.	14	Repairing with transplants.	30	
Ditto.	15	Ditto.	20	
Ditto.	16	Planting with Sissoo and Mulberry plants in December at 7½ feet apart. Intersowing with Jhund in spring.	82	34
Ditto.	47	Planting with Sissoo yearlings and intersowing with Jhund.	75	17
Ditto.	48	Planting with Sissoo and Mulberry at 7½ feet apart and intersowing with Jhund.	84	68
Ditto.	49	Intersowing with Jhund.	108	
Ditto.	50	Repairing blanks with transplants—	20	
		and intersowing with Jhund.	100	

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres	Roods.
Forest House Block I.	51	Intersowing with Jhund and Phulai.	100	
Ditto.	52	Repairing with transplants.	10	
		Intersowing with Jhund and Phulai.	60	
Ditto.	53	Intersowing with Jhund and Phulai.	20	
Ditto.	54	None.		
Ditto.	55	None.		
Ditto.	56	None.		
Railway Block II.	17	Intersowing with Jhund and Phulai.	64	77
Ditto.	18	Ditto.	64	77
Ditto.	19	Ditto.	64	77
Ditto.	20	Ditto.	64	77
Ditto.	21	Clearing of weeds and sowing with Sissoo, Ber, Phulai, Jhund and Reru mixed and sowing of cotton between ridges.	64	77

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres.	Roods.
Railway Block II.	22	Clearing of weeds and sowing with Sissoo, Ber, Phulai, Jhund, and Reru mixed and sowing of Cotton between the trenches.	64	77
Ditto.	23	Ditto.	64	77
Ditto.	24	Ditto.	64	77
Ditto.	25	Ditto.	64	77
Ditto.	26	Ditto.	64	77
Ditto.	27	Ditto.	64	77
Ditto.	28	Clearing the ridges of weeds, sowing with mixed seed and cultivating Cotton between the trenches.	64	77
Ditto.	29	Ditto.	68	08
Ditto.	30	Transplanting Sissoo and Mulberry yearlings.	28	
Ditto.	31	None.		
Ditto.	31	Transplanting Sissoo and Mulberry yearlings at 7½ feet apart.	39	02

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres.	Roods.
Railway Block II.	33	Transplanting of Sissoo and Mulberry yearlings.	33	38
Ditto.	34	Ditto.	33	38
Ditto.	35	Ditto.	35	38
Ditto.	36	Ditto.	34	38
Ditto.	37	Ditto.	34	38
Ditto.	38	Ditto.	35	38
Ditto.	39	Ditto.	49	38
Ditto.	40	Clearing the ridges of weed and sowing with mixed seed Sissoo, Ber, Phulai, Toon, Jhund and Reru.	58	38
Ditto.	41	Ditto.	58	38
Ditto.	42	Ditto.	58	38
Ditto.	43	Ditto.	58	38
Ditto.	44	Transplanting Sissoo yearlings.	32	38
Ditto.	45	Repairing blanks with Sissoo transplants.	10	
Ditto.	46	Ditto.	10	

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres.	Roods.
Canal Chouki Block III.	57	Ridging at 10 feet apart and transplanting of Sissoo and Mulberry yearlings, leasing the land between the lines for 3 crops. The conditions of this lease will be the same as those now in Compartments 30-39.	115	70
Ditto.	58	Ditto.	103	04
Ditto.	59	Ditto.	109	79
Ditto.	60	Ditto.	109	85
Ditto.	61	Ditto.	103	05
Ditto.	62	Ditto.	116	29
Ditto.	63	Ditto.	130	95
Ditto.	64	Ridging and sowing with mixed seed, Sissoo, Ber, Jhand, Phulai, Toon and Reru.	112	45
Ditto.	65	Ditto.	118	63

Block and Compartment.		Manner of Cultivation.	Area.	
			Acres.	Roods.
Canal Chouki. Block III.	66	Ridging and sowing with mixed seed, Sissoo, Ber, Jhund, Phulai, Toon and Reru.	75	00
Ditto.	67	Ditto.	77	24
Ditto.	68	Transplanting of Sissoo and Mulberry yearlings sowing with mixed seed Jhund, Reru, Sissoo, &c.	60 40	 32
Ditto.	69	Transplanting Sissoo, and Mulberry yearlings.	73	75
		Repairing with Transplants.	25	
Ditto.	70	No. Cultivation.		
Ditto.	71	Ditto.		
Ditto.	72	Ditto.		
Ditto.	73	Ditto.		
Ditto.	74	Ditto.		
Ditto.	75	Ditto.		
Ditto.	76	Ditto.		

All this cultivation will be finished by the end of 1872-73.

There may be some minor cultivations, such as intersowing Jhund and Phulai, and repairing smaller blanks, or studding the watercourses with willow and Tamarix, but these are of so little improtance, and it is so difficult to foresee when and where they will have to be executed, that I thought fit to omit them altogether.

The making, repairing and cleaning watercourses and also the watering comes under the same Heading Avi, or cultivation. I append the proposals for these works in separate forms.

WATERING.

I propose an annual watering of each Compartment. The younger Compartments and such in which repairs have been executed must be watered during the hot and cold season, the older Compartments only in the hot season.

I do not say that this yearly watering is quite necessary, but I believe it to be profitable (see Canal belt) and have therefore proposed an annual expenditure of Rs. 2 per acre under this Heading.

NEW EARTH WORK (CULTIVATION).

New watercourses are only needed in Compartments 57-68 in Block 3.

Irrigation cuts	...	...	...	1,107,500 cubic feet
Ridging	...	...	...	4,357,375 cubic feet
			Total ...	5,464,875 cubic feet

at Rs. 2 per 1,000 cubic feet at Rs. 10,929-12-0.

REPAIRS OF WATERCOURSES.

As I mentioned above, all watercourses have to be kept in good working repair, or we will derive only a partial benefit from the Canal water. If this be neglected we shall have to renew the courses altogether from time to time. I propose to set apart for this purpose 0-8-0 per acre, or Rs. 3,345 per annum.

With this sum I propose to entertain a gang of 16 coolies per Block. They should work under the immediate supervision of the Bildar Zemindar and the Bildars. Each of these coolies should have his own part of the Block set apart and be compelled to keep the cuts and watercourses therein clear of weeds and mud.

If no actual watering is going on, the Bildar Zemindar and Bildars should take active part in the clearings.

All these men may be used for Forest Conservancy work, if such is thought more needed than their own work, but great discretion should be used and they should not without just cause be taken from their own work.

NEW ROADS.

Proposed Plan of roads.

There are 30 miles of new roads to be made at an expenditure of Rs. 40 per mile, or Rs. 1,200 for the Circle.

REPAIRS OF ROADS AND BRIDGES.

I have set apart for this purpose 0-4-0 per acre, or Rs. 1,672 for the whole Working Circle, which I propose to expend on 8 coolies per Block, who will have to work under the direct supervision of the watchers.

These coolies have to keep the roads, bridges, pathways, &c., in perfect order and to cut new pathways where such are deemed necessary.

If the Officer in charge of the Working Circle considers any other Forest Conservancy work more important, he can take these coolies from their legitimate work at his discretion.

PROPOSALS FOR ESTABLISHMENT.

	per M. Rs.		Per Annum. Rs.
Officer in charge of the Working Circle —Assistant Conservator or Forest Ranger, average monthly pay	250	=	3,000
Moonshee	20	=	240
Two Chaprassies @ Rs. 5 each ...	10	=	120
Block I.			
Forester	30	=	360
2 Watchers @ Rs. 5 each	10	=	120
1 Bildar Jamandar	9	=	108
3 Bildars @ Rs. 7 each	21	=	252
Block II.			
Forester	30	=	360
2 Watchers @ Rs. 5 each	10	=	120
1 Bildar Jamandar	9	=	108
3 Bildars @ Rs. 7 each	21	=	252
Block III.			
Forester	30	=	360
2 Watchers @ Rs. 5 each	10	=	120
1 Bildar Jamandar	9	=	108
3 Bildars @ Rs. 7 each	21	=	252
Total ...	490	=	5,880
For Travelling Allowances, Contingencies, &c., ...			811
Grand Total ...			6,691

INCOME AND EXPENDITURE.

As the yield of thinnings, especially in the first year, is very fluctuating, I calculate the whole annual yield of 800,000 maunds saleable wood as beginning in 1881-82.

At Rs. 10 per 100 maunds exclusive of costs of cutting, this would be an annual rent of Rs 80,000, the Income under minor products is calculated at Rs. 2,500 only.

The balance sheet will prove that a constant watering will be profitable. I calculate only on watering during the hot season, but do not doubt that a watering through the whole year will be found advantageous, notwithstanding that the annual expenditure would increase at the rate of Rs 6,691.

If Rs. 30,000 of the first expenditure be deducted under the heading of "Experiments," the capital balance would in 1881-82 be changed by about Rs. 50,000 in favor of the value of the Circle, and the annual expenditure would decrease Rs. 2,000 under the heading "Interest" on expended capital.

Capital Value of the Forest calculated on Income.	Rs.
Estimated Annual Income from wood Rs. 80,000 $\times \frac{100}{5}$ =	16,00,000
Ditto from minor produce Rs. 2,500 $\times \frac{100}{5}$ =	50,000
Value of Income from beginning to 1881-82.	
Income up to end of 1871-72 = Rs. 22,400.	
Value of ditto with interest at 5 per cent at the beginning of 1881-82 = at Compound Interest $1{\cdot}05^{8} \times 22{,}400$ =	33,095
Estimated yearly income of Rs. 2,500 for minor produce from 1872-73 to beginning of 1881-82 with interest at 5 per cent = $\frac{1{\cdot}05^{8}-1{\cdot}05}{0{\cdot}05} \times 2{,}500$ =	21,371
Total ...	17,04,466

NOTE —The value of 1891 considerably increased through the standard trees.

Capital Value of total expenditure calculated on yearly expenditure.	Rs.
Total expenditure up to end of 1869-70 = Rs. 41,704.	
Value of ditto at beginning of 1881-82 = $1{\cdot}05^{10} \times 41{,}704$ =	67,932
1870-71 new expenditure = Rs 38,512, the value of which is at beginning of 1881-82 = $1{\cdot}05^{9} \times 38{,}512$ =	59,772
1871-72 according to regular estimate of budget Rs. 66,600, the value of this at the beginning of 1881-82 = $1{\cdot}05^{8} \times 66{,}600$ =	98,398
Proposed for 1872-73.	
Ridging 4,357,375 cubic feet @ Rs. 2 per 1,000 feet = 8,714	
Irrigating cuts 1,107,500 @ ditto = 2,215	
Roads 30 miles @ Rs. 40 per mile = 1,200	
Sowing and planting 2,700 acres and repairing blanks with seed, &c. = 6,000	
For houses for Establishment = 1,000	
19,129 =	
$1{\cdot}05^{7} \times 19{,}129$ =	26,916
For repairs in 1873-74 = $8{,}000 \times 1{\cdot}05^{8}$ =	10,736
Yearly expenditure from 1872-73 *to beginning of* 1881-82.	
Supervision @ Re 1 per acre for 6,691 acres = 6,691	
Clearing watercourses @ 0 8 0 per acre = 3,345	
Watering @ Rs. 2 per acre = 13,382	
Roads, bridging and conservancy @ 0 4-0 per acre = 1,673	
25,091 =	
$\frac{1{\cdot}05^{8} - 1{\cdot}05}{0{\cdot}05} \times 25{,}091$ =	2,14,367
The same expenditure of Rs 25,000 will be incurred annually.	
The capital value of this expenditure is to the beginning of 1881-82 = $25{,}000 \times \frac{100}{5}$ =	5,00,000
Total ...	9,78,121

Therefore.		Rs.
Annual Income from date of 1st regular yield	...	82,500
Grand Total	...	82,500

Annual expenditure from date of 1st regular yield.		Rs.
Interest on capital expended @ 5 per cent	...	23,567
Annual expenditure on supervision, &c.	...	25,000
Total	...	48,567
Or a yearly profit of	...	33,933
Grand Total	...	82,600

PART III.

Forest Control Book for the Working Circle, Vhan Khara, Changa Munga, Plantation.

This book is simply a ledger and journal which, taking the preceding Working Plan for a standard, draws comparisons between the calculations therein contained and the real results as they occur in the course of working the plantation.

The book consists of five different parts : I. yield of material. This part is again sub-divided into a yield of clear cuttings : b. yield of thinnings ; forms of which are appended.

Part II. contains forms, comparing the actual yield with the calculated yield.

Part III. is a summary of the annual yield.

Part IV. is a ledger for each Block, showing expenditure and income under the usual headings.

Part V. is the annual balance sheet for the whole Circle.

This Forest Control Book is to be kept in a careful and regular manner by the Officer in charge, so that it may serve as a kind of Chronicle of the Circle. It will also serve as a reference and "*Point d'appui*" for future revisions of this working plan, or in time, for making a new one.

The regular keeping of this book must be strictly insisted on, as without a class yield list of the attained yield, a revision as regards the regulation and fixing of the Budgets of yield is impossible. To enable the Officer in charge of the Circle to keep the Forest Control Book in a reliable manner, I annex a Forest Control note book, containing forms No. 1, a. and b., and form No. 4 interstitched with blank pages to make notes and remarks which may be useful for the future working of the Compartments or Circle.

There will also be found a pocket in the note book containing a sketch map of the Circle.

BLOCK NO. COMPARTMENT NO.

A. CLEAR CUTTINGS.

Year of cutting.	Manner of cutting.	Yield.			Total cubic feet.	Residue.
		Timber cubic feet.	*Firewood.*			
			I. class cubic feet.	II. class cubic feet.		

* A Book with 76 of these two forms is wanted one

BLOCK NO. COMPARTMENT NO.

B. THINNINGS.

Year of thinning.	Manner of thinning.	Yield.			Total.	Residue.
		Timber.	*Firewood.*			
			I. class.	II. class.		

for the felling and one for thinning in each Compartment.

Block. Name.	Block. No.	Compartment.	Area.	Year. Calculated	Year. Actual.	Calculated yield.	Actual yield.	+ of calculated yield.	− of calculated yield.	Remarks.
		* A book of		30 pages	10 pages for	each block	will suffice.			

SUMMARY OF YEARLY YIELD VHAN KHARA WORKING CIRCLE.

Year.	Fellings.				Estimating Cutting, Thinning, &c.		Total.			Remarks.
	Standard.		Coppice.							
	Useful wood.	Residue.	Useful wood.	Residue.	Useful wood.	Residue.	Useful wood.	Residue.	Grand Total.	
	Maunds.									
	* A	book of 20	leaves one		for each	year up to	end of 1st	Rotation.		

INCOME.

Yield.	Wood.									Minor yield.															Total.			Remarks.
	Timber.			Fuel.			Residue.			Grazing.			Grass.			Rent for land.			Plants.			Rent for shooting.			Fines.							
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	

EXPENDITURE.

Year.	B.									Collection of forest Produce.									Cultivation and Superintending.																					Total.			Remarks.
	Gazetted officer.			Establishment.			Travelling Allowance and Contingencies.			Felling.			Collecting and stacking of wood.			Miscellaneous Expenditure.			Cultivation.			Canals and trenches.			Roads and bridges.			Buildings.			Demarkation.			Prevention of damage, weeds, animals fires &c.			Miscellaneous.						
	Rs.	A.	P	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P	Rs.	A.	P	Rs.	A.	P	Rs.	A.	P.	Rs.	A	P.	Rs.	A	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A	P	Rs.	A	P	Rs.	A.	P	

* There must be two books of the Income and Expenditure forms, one with 76 forms for each Compartment, the other with 20 forms for each year up to the end of the first rotation.